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## Original Communications

### TETANY WITH THYMUS GLAND ENLARGEMENT.*

By LITTLETON DAVIS, M. D., Roanoke, Va.

My reasons for grouping tetany or spasmophilia with enlargement of the thymus gland will become more apparent after we have considered each separately, and then, briefly, their possible relation to the clinical signs and symptoms which are supposed to be, and perhaps may be, associated with either.

It has long been held, and without satisfactory explanation, that thymus gland enlargement is a prominent cause of sudden death in infants and young children. Surgeons, pathologists, and others whose work is aimed at reduction or removal of this gland, before or after death, have been the chief supporters of this view. From a careful review of many writers on this subject one fact stands out rather clearly, i. e., the symptoms attributed to an hypertrophied thymus rarely fail to include those that we see in infants having tetany.

Schultz[1] classifies tetany under the infantile diathesis, and mentions that it is often associated with status thymolymphaticus. Holmes[6] reported several cases associated with a large thymus in 1916.

Tetany may be active, manifest, or latent, coming out under certain favorable conditions. The symptoms may be mild or severe, varying from a slight crowing inspiration at the least excitement, all the way to complete apnoea with sudden death. A typical case of moderate severity gives a loud inspiratory stridor with a short arrest of breathing, the head is thrown back, the arms upward, the face is pale or slightly cyanosed, and has a deathlike expression, the eyes rolling upward. Violent efforts to breathe are made, with a squeak or crow with each effort, as a slight amount of air passes the glottis. So soon as the loss of consciousness is sufficient for a general relaxation of muscles, the glottis relaxes and breathing begins, although it is slow, deep, and stertorous for some time. There may be general convulsions or only the characteristic contractions of hands and feet, the thumb in the palm with the first two fingers bent over it and the toes strongly flexed with the feet turned inward. Many of the so-called nightmares and doubtless some of the sudden croup cases are manifestations of tetany. Some form of respiratory disturbance has been a feature in all of my tetany cases.

Important diagnostic signs of tetany are Chvostek's sign, the contraction of muscles supplied by the facial nerve on lightly tapping over this nerve, and Trousseau's sign, the hand taking the position of tetany when the arm is squeezed above the elbow sufficiently to impede the circulation in the forearm. Muscle excitability to cathodal opening contractions below 5 m.a. is taken to indicate tetany and a recent and most important finding is a lowered blood calcium to 6 or 7 mg. per 100 c.c. of blood, 10 mg. being normal for the healthy infant.

THE THYMUS: Symptoms that have been attributed to thymus pressure or an enlarged thymus have been indefinite, owing partly to their very nature. Among these may be mentioned a choking sensation with which parents have stated their children are afflicted in coughing spells which come on at night. Crotti[2] says choking spells may last only a few moments or be prolonged. Under diagnosis he states that respiration seems embarrassed all the way through. Stridulous breathing, contractions of the hands and feet, cyanosis and convulsions are also given as signs of thymus pressure. Dyspnoea with inspiratory stridor, thymic asthma with or without rales and with expiratory dyspnoea, continuous or with intermission, are given by others. The striking similarity between these symptoms and those previously given for tetany is apparent.

We owe much to X-ray workers, for our recent knowledge of the size and the normal time of involution of the thymus gland in infants. The thymus at birth varies in weight

*Read at the fifty-fifth annual meeting of the Medical Society of Virginia, in Staunton, October 14-17, 1924.

from 5 to 20 gms., the average as given by Hammer is 13 to 14 gms. It is biggest soon after birth and diminishes in size throughout the first year, only a few remaining full size in the second year. In most cases atrophy takes place spontanously at any time during the first year.

Liss,[3] in X-ray measurements from 119 cases in young infants, came to the above conclusions. Forty-two per cent of these normal new born infants had thymus glands measuring over 3 cm. transversely and marked enlargement. Apparently at the time of study none had shown respiratory disturbances of any kind.

Hammer (taken from Park[4]), making careful autopsies on thirteen children, reported as thymus deaths, found only two of the thymus glands enlarged. Greenthall[5] reports twenty-five per cent of ninety cases rayed for thymus shadows as having these glands enlarged, three of this number having a diagnosis of thymic asthma.

A large proportion of tetany cases have enlarged thymus glands. Especially is thus true of the very young infants under four or five months old. Whether this percentage is higher in tetany than that for normal infants of the same age remains to be proven.

My own meagre studies have led me to believe that the most severe, typical and persistent tetany is inherited, shows at an early age, is probably a manifestation of deficient or defective parathyroids, and that many of these infants develop enlarged thymus glands, perhaps along with the parathyroids, in an effort to make up such deficiency of function that may exist. If such a control could be proven, it may account for many of the cases which have been latent showing at a later period of childhood after complete thymus involution.

Of the four cases reported here, three were breast fed, one eight months old was bottle fed. The thymus was markedly enlarged in the three breast fed cases. It was absent in the bottle fed case. Two of the cases were Roentgen rayed for thymus reduction; there were no bad after effects noted other than a failure to gain weight for about thirty days following exposure in both cases. No abatement of the symptoms of tetany following treatments was noted. Were the symptoms due to pressure from size of thymus alone, except in rare cases of tumor of thymus, we should see improvement following Roentgen raying of this body, since there is definite and sure shrinking following these treatments.

Case 3 was a mild case, following whooping cough. The thymus was quite large, but was not reduced, and recovery was prompt after heavy doses of calcium chlorid and the usual whooping cough remedies.

Case 4 had an attack while on X-ray table, ceased breathing entirely for a few seconds, although a few moments before baby had seemed normal and lively. In this case there was no increased thymic shadow and a few minutes after the alarming attack baby seemed all right again. Condensed milk was stopped, 50 to 60 grs. calcium chlorid given for several weeks daily, and there has been no further return of symptoms.

In view of the recent tendency toward thymus reduction by Roentgen rays, in infants showing respiratory disturbances and convulsions, the frequent association of thymus enlargement with tetany and the constant overlapping of symptoms between the two, a much closer study of this subject is needed, at the present time, if we are to know what to do in young infants with a combination of clinical symptoms that may be so slight as almost to escape notice or of such severity as to be fatal in a few minutes' time with the first attack

I wish to express my thanks to Dr. McKinney for his careful X-ray work and his interest in the few cases here reported.

Case 1.—H. D., two and one-half months old, breast fed, well nourished, short neck, high chested infant. Had long expiratory cry since birth. Mother had convulsions as an infant and shows pronounced Chvostek now and always has had slight involuntary twitching of thumb and first two fingers.

Infant at two and one-half months began attacks of laryngo-spasm with general convulsions, continuing these at varying intervals from two a day to one or two a week, gradually becoming less frequent after ten months old. Chvostek and Trousseau signs constantly present, and hands and feet in position of tetany immediately after and sometimes at intervals between attacks. X-ray fourth day after attacks began shows very large thymus shadow, which was reduced by raying. Two months later there was a return of shadow which was again reduced by raying. At ten

months old there was less general tetany, still occasional severe attacks of laryngo-spasm, no thymus shadow, and about three months backward in muscular activity. Weight was nineteen pounds; well nourished infant.

*Medical Treatment:* From 20 to 70 grains of calcium chlorid was given daily, together with breast feeding and sunlight exposure.

Case 2.—H. H., breast fed, three months old, robust, high chested. First attack was a slight convulsion, followed by catchy inspiration somewhat like snubbing. Chvostek and Trousseau signs present; no carpo-pedal spasm between attacks. X-ray showed a large thymic shadow. Reduced by raying. There were two subsequent mild attacks. Chvostek still present at eight months of age, but no further attacks.

*Medical Treatment:* Fifteen grains of calcium chlorid were given three times daily, together with sunshine, fresh air, and breast milk.

Case 3.—This was a robust, nine months old breast fed infant. During the fifth week of whooping cough, had convulsion followed by marked carpo-pedal spasm, stridulous cough, and some twitching of hands and feet. Chvostek and Trousseau were present for several days after this. X-ray three weeks later showed enlarged thymus shadow; not rayed.

*Medical Treatment:* Calcium chlorid 15 grains was given three times daily. Bromide of soda and antipyrin were also used, together with breast feeding. No return of symptoms.

Case 4.—A. P. Condensed milk was fed in this case until nine months of age. This infant was well nourished, although there was a mild rickets. Began sudden attacks of croup with convulsions, attacks occurring four or five times daily. On slight handling or excitement I found baby would show marked inspiratory stridor with short, complete apnoea. There was no carpo-pedal spasm, but Chvostek and Trousseau signs were positive. X-ray revealed no thymus shadow.

*Medical Treatment:* Plain milk formula, calcium chlorid 15 grains three times daily. Cod-liver oil was also used, together with plenty of sunshine. There were no further symptoms.

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4. Edward A. Park. Organs of Internal Secretion, *A. J. D. C.*, Nov., 1916.
5. Roy M. Greenthal. Incidence of Thymic Enlargement without Symptoms in Infants and Children, *A. J. D. C.*, Nov., 1922.
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*Anchor Building.*

## X-RAY TREATMENT OF ENLARGED THYMUS IN CHILDREN.*

By JOSEPH T. McKINNEY, M. D., Roanoke, Va.

In a critical study and review of the literature on enlargement of the thymus gland in children, with or without associated hyperplasia in other nearby lymphoid structures, one encounters many theories and conflicting view points.

However, it is now practically generally agreed, and undoubtedly proven, that many of the sudden deaths in previously apparently healthy children are due to disturbances of the thymus gland. Enlargement of the gland, both on X-ray and post-mortem examinations, with evidence of pressure on the trachea, has been found in a number of these cases, no other cause of death being found. Hedinger, in autopsies in eighteen cases of "Thymus Death" in infants, demonstrated pressure on the trachea in each case. Beueke made similar observations, and Chevalier Jackson, by bronchoscopy, demonstrated actual pressure upon the trachea in a case of enlarged thymus. These children are frequently found supposedly smothered to death in bed.

To quote from a recent article by Peterson and Miller, Professor and Instructor, respectively, of Obstetrics in the University of Michigan School, *Journal A. M. A.*, July 26, 1924: "He (the obstetrician) must ever be on the alert to detect in the new born infant signs of thymic disturbance. Ignorance or carelessness in this regard will no longer be excused, since it is becoming a part of common knowledge that babies often die from some disturbance of this gland." Dr. Peterson concludes that "Abnormally enlarged thymus is common in the new born, occurring in from forty to fifty per cent of such infants. Potential dangers from hyperplasia of the thymus may be eliminated by early diagnosis and Roentgen ray treatment." To quote further from a recent article by Dr. Howland G. Freeman, read

*Read before the fifty-fifth annual meeting of the Medical Society of Virginia, at Staunton, October 14-17, 1924.

at the annual meeting of the American Pediatric Society, June, 1923, he states in his opening paragraph: "The thymus gland presents an interesting subject for investigation because its enlargement is accompanied by characteristic and often dangerous symptoms, and this enlargement and the symptoms which accompany it are usually readily controlled by a perfectly safe curative agent, the X-ray. The association of sudden death with thymic hypertrophy has long been known."

With the various conceptions of the causes of thymic death, time will permit the mention of only a few—compression of the trachea, nerves or great vessels, the probability of some toxin produced in the gland, or possibly some influence upon the para-thyroids, or a peculiar cardiac inhibition.

It may be of interest to briefly review the anatomy. The gland is composed of medullary and cortical substances surrounded by a capsule. It is made up of two pyramids, right and left, the bases lying on the pericardium, and the apices extending up in the cervical region, there being a cervical and thoracic type of enlargement. The cervical portion comes in intimate contact with the lower pole of the thyroid, being connected by a thyro-thymic ligament, containing branches of the inferior thyroid vessels. The thymic arteries are composed of a group of small vessels taking origin from the thyroid arteries, superior and inferior, internal mammary, and innominate artery. It is a very vascular organ, and rich in blood supply, the arterial supply being apparently richer than the venous drainage.

The cervical region of the gland is in relation inwardly and posteriorly with the trachea and inferior laryngeal nerve, and in the thorax with the vagus. Posteriorly, in the thoracic region, the thymus lies upon the right auricle and ventricle, and close to the vena cava.

The absolute diagnosis of enlargement of the thymus gland is dependent upon an X-ray examination, and few pediatricians now put much dependence in the percussion note or dullness. As a practical point, what then are sufficient signs of an enlargement of the gland to order an X-ray examination? First, I may say that, were it practicable, it would be well to examine the chest of all new born babies. This not being practicable, any child who is under-nourished, is subject to breath holding or fainting attacks, preceded by choking attacks, stertorous breathing, listlessness, sleeps with hands over the head, and does not thrive as a normal baby ought to on a well-balanced diet, should be X-rayed. If, in addition to this, the child is having slight convulsions without temperature, and has labored respiration, cyanosis, with regurgitation of food, and a somewhat putty appearance, the diagnosis clinically is much more suspicious. However, there is one exception to the under-nourished child. Babies with fat short necks and robust build are also fit subjects for thymic hyperplasia. The offspring of stout, obese mothers are more apt to have thymic hyperplasia.

I want especially to emphasize the fact that a number of normal children, as stated before in this paper, probably forty to fifty per cent, will show enlarged thymus, and that by no means all of these will show symptoms; in fact, a great number of these cases never give any symptoms, but I also want to emphasize the fact that there is, so far as is known, no way of telling which of these cases may develop early, or at a later time, symptoms referable to the thymic hyperplasia, and, also, that the Roentgen-ray appearance as to the enlargement is no absolute criterion to follow. I believe there may be a very small hyperplasia in the cervical region scarcely observable by the X-ray examination which may give you far more symptoms than a larger gland noted in the thoracic portion of the gland.

The safe procedure in this condition is to give all cases which show definite Roentgen-ray evidence of enlargement one or two treatments, even though there are practically no symptoms from the gland at the time. However, after one or two treatments are given and the child remains symptom free, I do not believe further treatments should be kept up, nor should you then continue to treat a shadow in the upper part of the chest.

Within the past two years I have seen twenty cases of enlarged thymus in children ranging in age from four weeks to twenty-three months old. Two of these cases were babies who had died suddenly without apparent cause, one found smothered to death in bed only two weeks ago. Both of these babies were X-rayed after death, and showed definite enlargement of the thymus. A post-mortem on one of these cases revealed an enlarged thymus, with so far as could be determined no other known cause of death. Two other cases of sudden death in

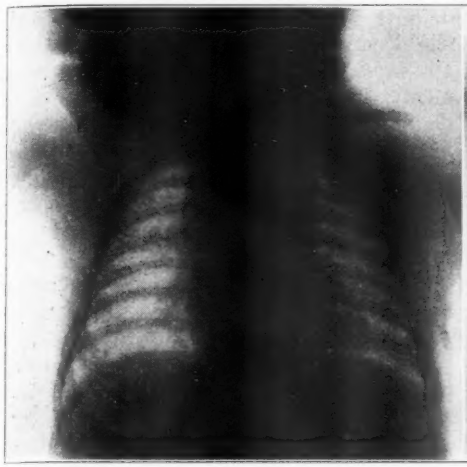

Fig. 1. Case 1. Baby B, age 4 months. Enlarged thymus. No symptoms, other than a slight hoarseness upon crying, and somewhat underweight. Parents apprehensive since a former, perfectly healthy baby, aged 4½ months, about two years ago had been found dead in bed, apparently suffocated.

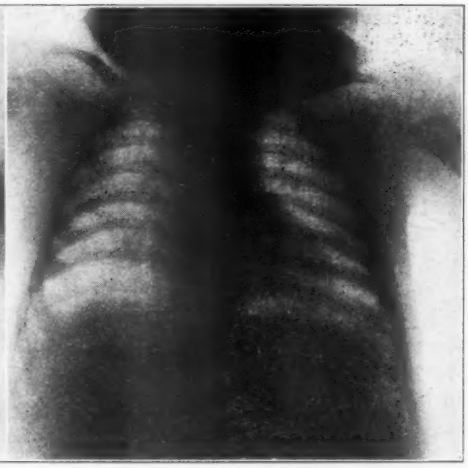

Fig. 2. Case 1. Baby B, one week later, after X-ray treatment, showing marked reduction in thymus. Three other treatments given, hoarseness disappearing, and weight returning to normal. Has never developed any further symptoms. Observed for past eighteen months.

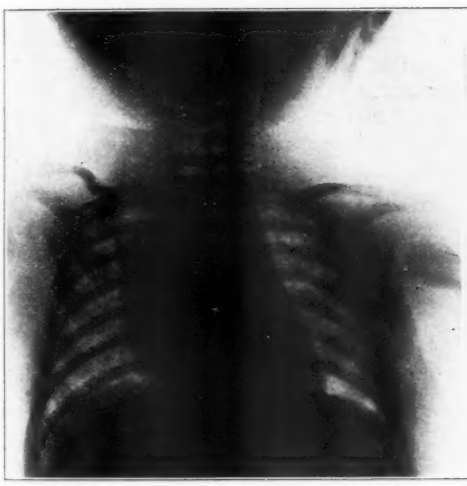

Fig. 3. Case 2. Baby J. S. (colored), age 8 months. Enlarged thymus with definite symptoms, convulsions, cyanosis, labored respiration, etc.

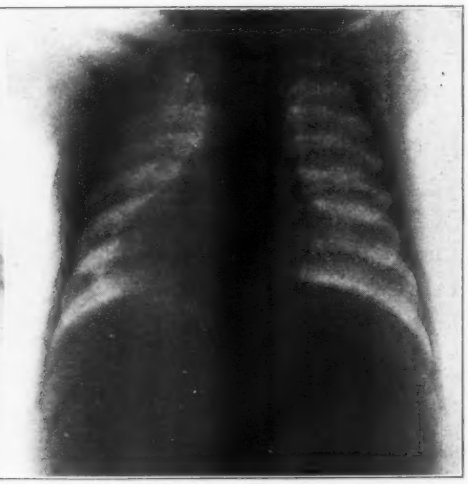

Fig. 4. Case 2. Baby J. S., ten days later, following X-ray treatment. Gland reduced. Symptoms improved. Developed whooping cough at this time, thymus again enlarging during the attack. Given two X-ray treatments, with complete recovery.

apparently healthy babies, not included in the above twenty, were thought by the attending physician and coroner to have died of an enlarged thymus, although a post-mortem or X-ray examination was not obtained.

One fatality occurred. Baby M. S., age four weeks, normal delivery, and healthy up to the third week, when parents phoned physicians that the baby seemed to have a cold and that her breathing was bad. When the attending physician saw the baby she was almost cyanotic and had marked labored respiration. He suspected an enlarged thymus, which was confirmed by X-ray examination, and an X-ray treatment was given on Saturday, March 17, 1923. The baby appeared to be some better on Sunday, but died suddenly on Monday, March 19, 1923. I feel that could this baby

have been treated sooner, we most probably would have saved her.

The remaining seventeen cases have been given from one to four X-ray treatments with the following technique: nine inch gap, 5 ma., 4 m. m. aluminum filter, ten inch distance, with three to five minutes' exposure directly over the gland. In each instance there has been a definite and marked reduction in the size of the gland, with an improvement in the symptoms. No fatalities have occurred in these seventeen cases.

Of the three cases reported by Dr. Littleton Davis in his paper, one was fluoroscoped, and no definite enlargement of the gland was noted, no plates were made, and the child was not seen at a subsequent time, so it is possible that there may have been some enlargement in the cervical portion of the thymus, not detected by the fluoroscopic examination. One of the other cases of Dr. Davis's, baby Arthur H., age four months, was given one treatment, April 25, 1924, and one week later the gland appeared to be practically normal in size. Further observation showed no definite return of the enlargement. Dr. Davis says the child still shows some tetany symptoms, though it is thriving and appears to be doing well.

Fig. 5. Case 3. Picture of thymus gland, weight 26.2 gms., found on post-morten in one of the sudden deaths reported, no other cause for death being determined.

The third case of Dr. Davis's, age two months, showed on January 4, 1924, a most marked enlargement of the thymus. One X-ray treatment was given on January 6, 1924, and within one week's time the gland showed definite reduction in size. Dr. Davis says the slight convulsions and tetany symptoms have not been very much influenced by the treatment. In April the gland again showed evidences of enlargement, and one other treatment was given April 6, 1924. After this treatment the gland appeared practically normal, and a film taken October 10, 1924, shows only a very slight enlargement at this time. Thus, in the three cases in which Dr. Davis reports tetany symptoms, one baby showed practically no enlargement of the thymus on fluoroscopic examination: the other two showed enlargement, one being given one X-ray treatment, the other two treatments three months apart. It is conceivable that both of these babies were given too little X-ray treatment, and that their tetany symptoms may be due to the thymus hyperplasia, which has never been completely reduced.

One of the other cases has been of exceeding interest. This was baby N. C., twenty-three months old, referred by Dr. Paul Davis, April 8, 1924. This child had been hoarse for three months; she was referred to a nose and throat specialist who advised the removal of tonsils and adenoids, but before doing this an X-ray examination was made. A marked and definite enlargement in the cardiac area and shadow was noted. Feeling that this very probably was an atypical thymus overlying the heart, we gave the child an X-ray treatment, and in one week the shadow of the cardiac area was definitely reduced. Two other treatments were given, but the child did not recover from her hoarseness, and we felt that in addition to the apparent enlargement of the thymus, she had papilloma in the larynx. The case was sent to Dr. Chevalier Jackson who confirmed the diagnosis, did a tracheotomy, and has since removed the papilloma. The child is still in Philadelphia, and is reported as doing well. This case emphasizes the importance of looking for other associated conditions, even though an enlarged thymus may be present.

Of the eight cases referred by Dr. Roger DuBose, two developed whooping cough during the treatment for the enlarged thymus. The gland in both instances was seen to enlarge during the attack of whooping cough. One of these was in a negro baby, the only enlarged thymus I have seen in the negro, and one of the most marked enlargements in the whole series.

## Conclusions.

1. Enlargement of the thymus probably occurs in forty to fifty per cent of normal infants.

2. Not all cases of thymic hyperplasia give symptoms, but it is advisable to treat this condition when found.

3. Thymic hyperplasia, directly or indirectly, is now generally conceded as a cause of sudden death in children.

4. Accurate diagnosis of enlarged thymus can only be made by X-ray examination.

5. X-ray treatment offers a safe curative remedy in this condition.

6. The possibility of other diseases and conditions being present with an enlarged thymus must not be overlooked.

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## Discussion.

Dr. Roger H. DuBose, *Roanoke*: I have enjoyed the papers very much. Personally, I have had six or eight cases under my observation in the last two years, and I have yet to find any definite symptoms by which to make the diagnosis without X-ray. None of the mild cases started with the same symptoms. Some came in because they were troubled with hoarseness, others with difficulty in swallowing. Three came in with convulsions. Each of these children was referred to the X-ray and showed enlarged thymus. All were treated and, so far as I know, all are living. There was one little fellow, just shown you, not a patient of mine, who began to have convulsions about ten P. M. The next day the doctor asked to do an autopsy. Went down next morning and had it X-rayed and did autopsy. It is the case just shown you, the gland weighing 26.2 grams.

Dr. Davis made the statement that tetany is associated with many thymus cases. I did not find it associated with any of mine except one colored child suffering with malnutrition, and I attributed it to that.

I want to ask one question before this discussion is closed. Did Dr. Davis have a calcium content test on any of these cases, and, if so, what did it show?

Dr. Vincent W. Archer, *University*: At what phase of respiration did you take the films, or did you take several at different phases, choosing the one with the least diameter? The diameter of the shadow of the thymus gland varies during various phases of respiration, sometimes as much as fifty per cent.

Dr. A. L. Gray, *Richmond*: I am glad Dr. Archer brought out that point. Dr. Grier, of Pittsburgh, showed films of the thymus gland in a number of children taken while quiet and taken while crying. As Dr. Archer has said, the dimensions of the thymus of a crying child may be almost twice that of the same child while composed. So in comparing our results it is necessary that the plates be made under exactly the same circumstances.

This brings up another interesting question. Why is it that a child has these attacks of convulsions with obstructed respiration when crying, and perhaps will not when in perfect rest? The demonstrations of Dr. Grier showed this very clearly. When the child cries the thymus enlarges immediately, followed by dyspnea and convulsions.

One other point in regard to papilloma of the larynx. It has been my privilege to treat eight or ten cases with X-ray, and I think I have never had more satisfactory results than in the treatment of these cases. In a large percentage of them it shrivels away and the larynx becomes normal after a few series of treatments.

Dr. D. M. Kipps, *Front Royal*: Do these cases of tetany with thymus gland enlargement have a *general* enlargement of the lymphatic tissues?

Dr. E. G. Gill, *Roanoke*: I am interested in these papers from a viewpoint of a laryngologist. It seems to me that any child that complains of embarrassment of respiration should have the benefit of a laryngeal examination before any treatment is instituted. The importance of this examination is emphasized by the fact that one of the cases which was diagnosed as having enlarged thymus gland, later proved to be a case of papilloma of the larynx. The laryngeal examination can be made with a direct laryngoscope in any home, without any anesthetic, either local or general. It can be done in a few minutes and is perfectly harmless and a safe procedure.

In regard to X-ray treatment of laryngeal papilloma as suggested by Dr. Gray, it has been my experience that this condition is essentially a benign, self-limited one. The papilloma will disappear in the course of two or three years, regardless of whether you do or do not treat it. The one thing that you have to do is to provide for respiration and this can be done by performing a tracheotomy. After the tracheotomy is done there should be repeated excisions of the growths, but not with the intention of curing this condition, but only for providing breathing space. The child should not be allowed to depend entirely upon the tracheotomy tube. The tracheotomy tube worn should be only one-half the diameter of the trachea. This will allow breathing space through the tracheotomy tube and larynx.

Dr. W. P. McDowell, *Norfolk*: I would like to ask Dr. Davis if he has made X-rays of any babies

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with evidence of spasmophiliac diathesis which did not show enlarged shadows of the thymus. If so, what percentage?

One of the cases he reported did not seem to have an enlarged thymus. Does he not think that this was a case of spasmophilia, or was there some definite enlargement of the thymus?

DR. LITTLETON DAVIS, *Roanoke*, closing discussion: Let me take the last question first. We did not make any comparison between enlarged thymus cases and spasmophilia cases. The baby which did not show enlarged thymus had the same symptoms as the others which did show enlargement. We thought this case was due to excessive sugar diet (condensed milk).

In none of our cases were tests made for blood calcium content. Some were tested for hyperexcitability of muscles.

One point I wish to make: If we could tell when there is definite thymus pressure, it would be easier to say whether or not X-ray treatment actually causes remission of symptoms. Spasmophilia symptoms are often transitory or of short duration.

One other point: Nearly half of all babies have enlarged thymus glands which remain, after death from any cause. There is then, it seems to me, no satisfactory reason for giving enlarged thymus alone as a cause of death without other evidence.

In regard to cervical thymic enlargement: From my standpoint it is inconceivable that an enlargement of this portion of the gland should produce more symptoms than an enlarged thyroid in the same region. Regardless of size of thyroid, it is rare indeed that goître patients die suddenly from thyroid pressure. It is something to think over.

DR. J. T. MCKINNEY, *Roanoke*, closing discussion: Dr. Archer brought out a point well known to X-ray men: The importance of taking films with suspected thymic enlargement both after inspiration and expiration. This we invariably do, as the shadow of the thymus varies considerably during the respiratory movements, and frequently a great number of films have to be taken for comparison.

In regard to papilloma of the larynx: I feel that this is a condition which is frequently overlooked. In the last six months I have had six cases of papilloma and believe, as stated by Dr. Gill, that some of these cases will recover without operation. One case I mentioned, however, was operated upon, and will be in Philadelphia for several months under Dr. Chevalier Jackson's care.

Dr. Gray brought out the point that X-ray therapy is very efficacious in cases of papilloma. I am treating two cases now, and they are improving.

There was no lymphatic enlargement in the cases reported.

I want to emphasize Dr. Davis's closing remark, in the handling of these thymic cases: The cooperation of the pediatrician, and general practitioner is of the greatest importance. More and more cases of enlarged thymus will be recognized and found, if the condition is suspected and looked for.

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THE GHOSTS THAT HAUNT US.

It isn't the thing you do, dear,
  It's the thing you leave undone,
Which gives you a bit of heartache
  At the setting of the sun.
The tender word forgotten,
  The letter you did not write,
The flowers you might have sent dear,
  Are your haunting ghosts tonight!

—*Margaret E. Sangster.*

## CLINICAL SIGNIFICANCE OF CHANGES IN THE BLOOD CHEMISTRY.

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A hundred years ago Prevost and Dumas read a paper before the Society of Physics and Natural History of Geneva in which they showed that when the kidneys were removed from rabbits, urea rose to a high concentration in the blood. This work was the starting point for blood chemistry, and paved the way for its clinical application in the study of a variety of diseases. Clinicians, however, have been slow in making use of analytic studies on the blood for it has only been within the last ten years that quantitative chemical blood tests have been carried out on any extensive scale and only within the last few years have the smaller hospital staffs become at all dependent upon these determinations as diagnostic aids. Curiously enough we find that many physicians in private practice are still rather indifferent to the practical application of these special studies and for some reason have not sensed the importance of such tests.

No diagnostic study may be considered complete without a knowledge of the more common chemical ingredients of the blood, and fortunately the tests with few exceptions have been so simplified as to make them routine in many types of cases. Formerly, our energies were devoted to a study of the structural defects of an organ, but through the influence of physiological chemistry, we now recognize the fact that the greater problem is the determination of the degree of functional impairment. With this end in view, an insight into the chemistry of the blood is indispensable.

The purpose of this paper is to point out the clinical significance of certain deviations from the normal which may be found in the study of the more important chemical constituents of the blood. These modern aspects of biochemistry are probably familiar to all of us but a review of their practical applications may be worth while. Obviously only a brief reference to each of the major elements can be made in a summary of this kind.

*Blood Volume.*—We are indebted to Keith,[1] Rowntree and Geraghty for calling attention to the practical application of this laboratory development. The principle underlying this test is the introduction into the circulation of a non-toxic slowly absorbable dye (vital red) and its determination in the plasma colorimet-

rically by comparison with a suitable standard mixture of dye and serum. Normally the plasma constitutes about one-twentieth of the body weight. The volume occupied by corpuscles was found to average 43 per cent for the cells and 57 per cent for the plasma. On this basis these observers have calculated that blood normally is 8.8 per cent of the body weight. With this method they were able to demonstrate the amount of decrease in blood volume as a result of hemorrhage and of the increase following infusion of saline. It has also been shown that the blood and plasma volume are increased in pregnancy before term, but return to normal within a week or two after delivery. Brown[2] and Keith have shown that in obesity the plasma and blood volumes are relatively small. Anemia shows a high blood volume, a similar condition existing in anasarca following cardiac decompensation. On the other hand the blood volume is relatively low in marked hypertension, which tends to prove that the elevated pressure is not dependent upon a large blood volume.

*Non-Protein Nitrogen.*—Although the non-protein nitrogen constitutes only about 1 per cent of the total nitrogen of the blood, greater interest is attached to it than to the protein nitrogen. This is due to the fact that cellular metabolism is dependent to a great degree upon variations in these non-protein constituents. Normally the non-protein nitrogen of whole blood yields between 25 and 35 mgm. per 100 c.c. and urea nitrogen lies between 10 and 15 mgm. Since urea is the chief nitrogenous waste product and its estimation is simpler than that of the non-protein nitrogen, the urea estimation is usually made.

The level of urea is the most reliable single test of renal function at our disposal. In advanced cases of nephritis with impending uraemia the retention may amount to several hundred mgms., although 100 mgm. and over is relatively uncommon. A urea reading above 25 mgm. after a night's fast is indicative of some renal impairment. Relatively high figures are found in acute infections and circulatory disturbances, due probably to kidney complications. In cases of prostatic obstruction Squier[3] and Myers have pointed out that the urea is an excellent prognostic test not generally going over 20 mgm. in uncomplicated cases.

*Uric Acid.*—In the normal metabolism of man uric acid and its related substances are derived in the main from the decomposition of nucleo-proteins. These latter are found endogenously in the nuclear material of cells and exogenously in foods containing purin bodies, such as thymus, kidney, liver and brain. Although muscle is relatively poor in it, the large consumption of it makes it the most important carrier of purin bodies in the ordinary diet. There is no difference between red and white meat.

Since the more reliable tests have been employed, uric acid is not the bug-a-boo it formerly was. It is found between 1 and 3 mgm. per 100 c.c. of normal blood but may be increased to 10 mgm. in cases of gout, and advanced nephritis. A high reading is seldom due to an increased production but rather to a decreased elimination. Its content is also affected by eclampsia, cardiac decompensation, lead poisoning, malignancy, leukemia and acute infections. In many instances of an early nephritis a retention of uric acid may be noticed before any change is demonstrable in urea or creatinine.

*Creatinine.*—Creatinine determinations have been possible only since 1914. In normal individuals the creatinine of the blood amounts to 1 or 2 mgm. per 100 c.c. Its chief value in the study of disease lies in its prognostic application. Its increase is a safer index to the degree of renal impairment than urea for the reason that creatinine on a meat free diet is entirely endogenous in origin and its formation very constant. Urea is largely exogenous under normal conditions and is, therefore, subject to greater fluctuations. A lowered nitrogen intake may reduce the work of the kidney in eliminating urea, but cannot affect the creatinine to any extent. A creatinine reading of 5 mgm. or over is generally considered as an indication of an almost invariable fatal termination.

*Sugar.*—The most widely used biochemical test is the quantitative determination of sugar in the blood. Simplified micro-methods are now available which give reasonably accurate results.

The blood sugar of the normal human subject taken before breakfast falls between .09 and .12 per cent, the average being .10 per cent. These figures apply to venous blood, although after a night's fast there is little difference between venous and arterial blood. Foster[4] has recently shown that finger blood is virtually

arterial blood and that after the ingestion of glucose the sugar content is materially higher than venous blood.

All forms of glycosuria are accompanied by hyperglycemia except renal diabetes. The normal threshold of sugar excretion is about .17 per cent. With blood sugar concentration of .15 to .20 per cent the appearance of sugar in the urine is dependent upon whether or not diuresis exists, glycosuria appearing especially in the latter case. When glycosuria finally starts, it may continue until the blood sugar almost reaches normal. Ordinarily in the early cases of the disease there is a fairly direct relationship between the hyperglycemia and glycosuria. In the latter stages, however, there is often a marked hyperglycemia with only a slight glycosuria, showing that the threshold has been raised. This has been our experience on several occasions during the past year. An associated chronic nephritis often accounts for this finding. This apparent discrepancy between blood and urine tests has served to emphasize the importance of blood sugar determination. For many years the treatment of diabetes was controlled by urinary examinations which in many instances failed to show the true condition on account of an elevated threshold. The general trend of opinion on this point is in favor of controlling the blood content, although Mosenthal[5] has suggested that the raised threshold may be merely a protective measure to adjust carbohydrate metabolism for the more advantageous utilization of glucose.

Aside from alimentary glycosuria and involvement of the pancreatic islands, a hyperglycemia may occur in hyperthyroidism, in some cases of cholecystitis, nephritis, and occasionally in acute infections. We recently had a patient with an abscessed appendix and high blood urea develop a marked hyperglycemia which persisted until his acute infection had passed.

A low blood sugar reading on the other hand is frequently observed in myxedema, pituitary disease and sometimes Addison's disease. Recently Henderson[6] has shown that there is a lowered blood sugar following physical exhaustion, and others have found similar changes in the fatigue neuroses. High carbohydrate feedings have been recommended for both of these conditions.

Among the blood lipoids, *cholesterol* is the most important member. It occurs in the blood in both the free and combined state and is present in a concentration of about .15 per cent. It constitutes an index of the degree of lipemia in diabetes and may run as low as .07 per cent in pernicious anemia. In general it may be stated that a high cholesterol reading is found in arteriosclerosis, diabetes, obstructive jaundice, in many cases of cholelithiasis, in the early stages of malignant tumors, and in pregnancy. Its chief diagnostic importance, however, lies in the recognition of Epstein's nephrosis where there is a marked hypercholesterolemia. It is recalled that in the latter condition there is a low blood urea but there are other distinct evidences of a nephropathy.

*Mineral Constituents.*—The chief mineral constituents of the blood are sodium, potassium, magnesium and calcium. With the exception of the last one, all remain remarkably constant in health and disease, and consequently have practically no diagnostic interest.

Calcium is the outstanding exception in the mineral class, and today it is recognized as influencing to a large measure the development of many clinical entities.

In 1909 MacCallum[7] showed that tetany was indirectly caused by a reduction in the calcium content of the blood. According to Howland,[8] tetany developed when the blood calcium fell below 7 mgm., and was promptly relieved by the administration of the drug in proper doses. Marriott and Howland were the first to point out that the serum calcium in advanced nephritis with phosphate retention and acidosis is markedly reduced.

It has, of course, been found diminished in certain types of anemia and albuminuria, and more recently its low level in urticaria, hyperesthetic rhinitis, asthma, etc., has received considerable attention. Pottenger's studies on calcium in asthma have been extremely interesting as many cases which formerly resisted other methods of treatment, can be relieved by the administration of the drug.

*Chlorides.*—Although chlorides are commonly found in most foods and are demonstrable in both the cell and plasma, few clinical generalizations regarding pathological variations can be made.

It was formerly thought that chlorides were increased in arterial hypertension, thus acting as one of the major causes of this condition. Later observers, however, have failed to corroborate these earlier findings. High blood

chlorides have been found in certain types of nephritis with oedema, eclampsia, prostatic obstruction, in anemia, and in certain cases of malignancy. It is interesting to note that in nephrosis, despite the marked oedema, there is no salt retention.

The most striking fall in blood chlorides has been observed in experimental pyloric obstruction in dogs. Hayden[9] has shown that this decrease is not due to loss of chlorides in the gastric juice but probably to the taking up of the chlorine somewhere in the process of protein destruction. They have employed sodium chloride therapeutically in pyloric and intestinal obstruction and believe that it has a marked effect in preventing and controlling the toxemia.

*Phosphorus.*—Although the presence of phosphorus in the blood in lipoid form has been recognized for some time, its inorganic compounds are of greater clinical interest. Normally the acid soluble phosphorus varies between 2 and 6 mgm. per 100 c.c. Bloor[10] gives the average content of inorganic phosphorus in the plasma of both men and women as about 3 mgm. per 100 c.c. and of lipoid phosphorus about 7.5 mgm.

On account of the introduction of simpler methods in the determination of this blood constituent a number of interesting clinical observations have been recently made. de Weeselow[11] has reported his studies on fifty-three consecutive cases of nephritis with thirteen deaths. In twelve of the fatalities the highest phosphorus reading ranged from 10 to 22 mgm. He believes that phosphate retention is more definitely connected with the symptoms of true uremia than is retention of urea.

Howland[12] and Kramer have published equally interesting observations on the relation of phosphorus to rickets, which is now a matter of common knowledge. These authors have shown by clinical studies that the rachitic infant has practically one-half of the inorganic compound to which it is normally entitled. By the use of cod-liver oil or ultra-violet light there is an immediate response in the percentage of phosphorus.

The chemical changes relating to the acid-base balance in the blood have been shown to exert a definite influence over the clinical course of many disease processes. In health, the alkaline reaction of the blood is maintained by means of the bicarbonates, phosphates, and proteins circulating in the blood. Of these, the bicarbonate is the most important factor, supplying approximately three times as much alkali as all the other buffers combined. Van Slyke[13] and Cullen have shown that the $CO_2$ content of the blood plasma is practically all in the form of bicarbonate and that a determination of the amount of this factor will indicate the so-called alkaline reserve.

The practical result of these studies has been to call attention to the possible serious effects following the administration of alkalies. Hardt[14] and Rivers have reported unfavorable reactions with the Sippy treatment in certain cases of duodenal ulcer. Alkalosis has also developed in patients with pneumonia to whom alkalies have been freely given and there is reason to believe that in cases with impairment of renal function dangerous complications may arise unless the acid-base balance is carefully followed. The alkali deficit, such as occurs in diabetes, has been known for some time, but only within recent years have the dangers of therapeutic alkalinization for this condition been fully recognized. Acidosis from this source is now approached from a different angle and very rarely is bicarbonate of soda considered a judicious measure in the treatment of this complication.

The significance of changes in the chemistry of the blood is still veiled in doubt in numerous instances, but the chemical studies of the past few years have given a rational understanding of many obscure problems and have opened up therapeutic possibilities which were hitherto unknown. There is reason to believe that the ideal diet in disease and health will be ultimately determined by a study of these physiologic processes and that the chemistry of individual foods will receive greater emphasis in our laboratory training.

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The writer has quoted freely from the exhaustive discussion of this subject by Victor C. Myers, published in Physiological Reviews, Vol. IV, April, 1924.

## SURGICAL TREATMENT OF UNILATERAL PULMONARY TUBERCULOSIS.*

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No real progress was made in the treatment of tuberculosis for 2,000 years, from the time of Hippocrates until about fifty years ago; then, within the brief period of half a century, there appear three great landmarks of progress. Brehmer and his pupil, Detwiler, revolutionized the treatment of pulmonary tuberculosis by the application of hygienic methods, *e. g.*, fresh air, forced feeding and rest. Trudeau, of Saranac Lake, brought all of this to the attention of the profession of this country. The second outstanding landmark was artificial pneumothorax discovered by Forlanini in the early eighties. The third mile-post is found in the surgical treatment of those cases which remain not sufficiently benefited by hygienic treatment and artificial pneumothorax.

This country is not accustomed to consider itself behind in surgical endeavor, yet we have to admit that we have been unduly backward in the surgical treatment of pulmonary tuberculosis. The surgical role of this drama has been written and played almost exclusively by Swiss and German surgeons. Scandinavia, England and France followed Switzerland and Germany. About two years ago, Archibald, of Montreal, reported fifteen cases, his first case having been done in 1912, his work being interrupted in 1914 by the World War, to be resumed three years later. Archibald caught the inspiration from such men as Friedrich, of Marburg, and Henschen, Sauerbruch's assistant, while we in the United States followed Archibald, of Canada, except, it should be remembered, that Freeman, of Denver, in 1909, recommended that a few ribs in front be removed over the upper lobe and a truss be applied to compress cavities in the apex.

Watson, of Mt. Regis, reports 117 cases in which artificial pneumothorax was used in the treatment of more or less advanced unilateral cases which had failed to respond to the usual hygienic treatment and presented little hope of improvement without collapse. He partially collapsed seventy-nine (67½ per cent) and completely collapsed thirty-eight (32½ per cent). Of the latter thirty-eight, only one is now arrested, and twenty-nine are dead. The remaining eight are bedridden except one. Out of the seventy-nine, he has been able to rehabilitate twenty. Out of the 117 cases, only twenty, or 17 per cent, have ben able to return to some kind of work.

In reviewing these statistics, one is immediately struck with the small percentage of improvements or cures, showing that pneumothorax is only beneficial in about 17 per cent of the cases, the other 83 per cent receiving very little, if any, benefit. I have tried to find out the reason for this, and in my judgment it is due to several causes. First, artificial pneumothorax can only be done in cases in which the contra-lateral lung is very slightly, if at all, involved. If the opposite lung is even moderately diseased, compression of the bad lung will throw too much work on the other lung and cause a rapid dissemination of the tubercular process, thus defeating our effort. Second, artificial pneumothorax is impossible when dense or even moderately dense adhesions are present, the adhesions preventing compression. Such statistics as these show us, notwithstanding the marvelous progress that has been made in the treatment of this deadly disease, whose

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mortuary statistics a few years ago headed the list of the causes of death in this country, but which now on account of the advances that have been made in the past fifty years has dropped from first to third place, that there are yet a large number of cases that do not respond to treatment by hygiene and artificial pneumothorax. It is in these cases that we feel that surgery offers hope.

It may be conservatively estimated that at present there are in this country 15,000 persons with pulmonary tuberculosis for whom surgical interference is indicated, many of whom are living at home, too diseased for admission to sanitoria, spreading infection and unable to work, and, if unaided, almost certainly doomed to die.

Statistics compiled by Alexander show that within the past five years Sauerbruch, of Zurich and Munich, has alone reported over 500 operated cases, while the total number from all clinics in the United States and Canada is 110. Archibald has performed forty operations since 1912; Shivers, of Colorado Springs, reports twenty-seven patients since 1914, Lilienthal, of New York, twelve, Law, of Minneapolis, eleven, Welles, of Saranac Lake, eleven, Eloesser, of San Francisco, five, Willy Meyer, of New York, five, and there have been other smaller series.

The reason this operation has been so slow in being adopted is ignorance of the method, its indications, execution and results. In a standard American text-book on tuberculosis, 1922 edition, we find only three pages devoted to description of the method, and only nine small pages in the 1920 volume of a 32 volume French system of medicine; both of these accounts are uninformed, inaccurate and misleading. A further significant reason for the slow popularization of surgical compression therapy is that certain articles, purporting to represent and illustrate standard procedure, but actually describing inefficient, if not dangerous methods, appear from time to time, and are obliged to report such high mortalities and poor final results that those seeking information are driven away from surgery because they are not properly informed and attracted. Probably the two greatest sins are: (1) Reporting cases as operated upon by the "Sauerbruch technic," when the first rib has not been touched. Except in rare cases, resection of a portion of that rib is an essential step in the operation. (2) The use of partial operations, half-measures, when the widest experience has demonstrated that only total operation may be expected to produce the successful result desired.

Alexander, of Ann Arbor, Michigan, has outlined the only comprehensive survey of modern compression therapy that exists, as far as I know, in the English language. In his paper he outlines a standard procedure that may be expected to give the best results in the light of modern knowledge, in the hope, as he says, that it may help the profession to understand and to popularize it some years in advance of the time when it would arrive by the normal process of diffusion. His paper is based upon a critical review and analysis of the world's literature of the past six years.

One hundred years ago James Carson predicted that if a cure were to be found for pulmonary tuberculosis it would be by surgical operation, effecting a mechanical compression that would put the diseased parts in a quiescent state. In 1885, the first attempts in this direction were made by deCerenville, of Lausanne. thereby initiating the method that is used today. In 1901 and 1903, Garre and Quincke first urged thoracoplasty for hemoptysis, and advocated supplementing it with an extrapleural pneumolysis. Brauer realized that clinical success depended upon obtaining pulmonary compression comparable in amount with that obtained by artificial pneumothorax, which was already effecting remarkable cures. Therefore, he proposed the removal of the entire length of the ribs, two to ten at one sitting, in order to obtain actual compression of the lung, instead of mere relaxation. Friedrich, his surgeon, first operated by this method in December, 1907, and the result was highly satisfactory. However, in their series of twenty-nine cases there were eight operative deaths, a mortality of 27.5 per cent; there were six complete cures, 20.7 per cent. Lenhartz used the same technic and in addition pressed the apex toward the hilus and lost nineteen out of twenty patients. Sauerbruch has used the Brauer-Friedrich technic upon seventy-one patients, sixty-two of whom, however, he operated in two or more stages; his only operative deaths, two in number, occurred after single stage operations. His combined early and late deaths totaled thirty-one (43.6 per cent); his improvements twelve, (16.9 per cent); and complete cures twenty-eight (39.4 per cent).

XUM

At present the Brauer-Friedrich operation is obsolescent because of its many dangers. It is still sporadically used for rare cases where the pleura and mediastinum are known to be so thickened by adhesions that mediastinal displacement and flutter are not to be feared. Even then it would be used only by dividing it into two or more stages.

As the Brauer-Friedrich operation was a reaction against the restricted resections of the earlier thoracoplasties, so the present types of operation are compromises between the two—extensive enough for favorable clinical effect, and yet conservative enough to avoid unusual operative dangers.

*Pathological Anatomy and Physiology.*—Sauerbruch states the history of a patient upon whom he performed thoracoplasty on account of repeated hemorrhages and cavities in one lung in spite of active disease in the other lung; the patient died three months later. There was seen at necropsy a definite tendency to encapsulation, with young connective tissue, of all tubercles and caseous nodules in the compressed lung; its cavities were mere clefts which were being filled with new granulation tissue containing many blood vessels. The uncompressed lung showed new cavity formation and extensive caseous pneumonia, but without any tendency whatsoever toward encapsulation. That the far-advanced lesions in the compressed lung of a dying person were able to progress so far toward arrest in a period of three months is illustrative of the effect of compression.

While bed-rest considerably quiets respiration, it is not able to put the lung at complete rest nor to protect it against the violent movements of coughing. Compression therapy not only does this, and thereby largely checks the movement of toxin-laden lymph into the general circulation and of bacilli-laden lymph to new situations in the lung, but empties the lungs of accumulated products of degeneration, and, by flattening the lumina of the bronchi and alveoli, prevents the spread of infection by the bronchial tree route; most important of all, it is directly responsible for a rapid new growth of fibrous tissue which encapsulates the lesions and eliminates the disease.

As thoracoplasty removes the posterior ends of the ribs and as the gaps are usually filled with new bone without joint formation the bony cage on the operated side is no longer able to share in respiratory movements, and as dense pleural adhesions soon follow operation, the diaphragm becomes fixed and greatly restricted in function.

Examination of a compressed lung, which has successfully controlled its tuberculous lesions, shows a fleshy mass, full of connective tissue which is particularly evident around the blood and lymph vessels and bronchi, and as septa radiating from the subpleura. Some of the blood vessels may be thrombosed. The tubercles are dry and are seen to be firmly encapsulated by fibrous tissue which either just surrounds them or grows through and through them. If any new tubercles are found, which is rare, they are small, non-caseous, and contain many giant cells.

These favorable effects of compression are apt to be seen only upon disease that is predominantly proliferative or fibrous in character, as the connective tissue for the encapsulations seems to arise largely from that which has already formed in an unsuccessful attempt to cure. As there is little tendency toward connective tissue formation in exudative lesions, lung compression is less likely to be followed by fibrous encapsulation.

Ample necropsy material has shown that the amount of connective tissue in a compressed tuberculous lung is far in excess of that in an uncompressed tuberculous lung, and that it will form in cachetic persons in whom it could not be expected were the lung uncompressed. Factors responsible for the growth of fibrous tissue in lungs are (1) stimulation by toxins in the stagnant lymph; (2) chronic hyperemia; (3) cessation of lung function.

*Thoracoplasty Compared with Artificial Pneumothorax.*—At present the working rule that thoracoplasty is never to be used when artificial pneumothorax is obtainable is almost everywhere strictly observed. Inquiry into the differences between the methods, and the relation between them, will be of value for a better understanding of thoracoplasty.

The number of patients whose pulmonary disease is sufficiently unilateral to warrant compression of one lung is variously estimated from 2 to 10 per cent. Matson attempted artificial pneumothorax in 248 cases. In 41.3 per cent only partial compression was obtainable and the clinical cures were only 15.5 per cent. whereas satisfactory compressions produced 45 per cent of clinical cures. Saugmann at-

tempted artificial pneumothorax upon 211 third-stage tuberculous patients; 70.2 per cent were able to do ordinary light work when the pneumothorax had been complete; 33.3 per cent when there were only limited adhesions; only 11.5 per cent when there were extensive adhesions. Saugmann claimed that he failed to do satisfactory compression in 30 per cent of his cases.

Numbers of series of cases show that the final results of pneumothorax and of thoracoplasty are about the same, that is, roughly, 35 per cent cured, 30 per cent improved, 35 per cent uninfluenced. Empirically, therefore, it cannot be claimed that thoracoplasty is less effective because it produces less compression than pneumothorax. Each method has certain advantages over the other.

Pneumothorax, in contradistinction to thoracoplasty, is non-deforming, non-shocking, and as compression is produced gradually, at many sittings, it avoids the dangers of acute circulatory and respiratory upsets and of pneumonia from aspiration of large amounts of expressed secretions, or failure to expectorate them on account of operative pain.

Although thoracoplasty upon tuberculous persons is distinctly a major operation with a definite operative mortality (2 to 10 per cent), the new technic, and especially operation in several stages, has made it remarkably safe. While the operation of artificial pneumothorax is an essentially trivial procedure, it entails many grave risks. Gas embolus and pleural eclampsia are real dangers, although not always fatal, and numerous other complications arise, such as ammulation of fluid in the chest which may become purulent, and formation of fibrous adhesions under this fluid which may prevent complete compression. Rupture of the pyo-pneumothorax usually is the result of trying to stretch adhesions with high positive gas pressure, and the outcome is frequently fatal.

The immediate results of pneumothorax are frequently so satisfactory to some patients that they fail to return for subsequent treatment. In such cases if the lung is allowed to reexpand, formation of pleural adhesions invariably prevents subsequent compression and when they return on account of their active symptoms, then thoracoplasty must be resorted to. In order that pneumothorax may be effective it should be continued for about three to five years. It has been claimed that one of the important advantages of pneumothorax over thoracoplasty is that after the release of the gas the lung resumes its normal function instead of being forever useless. As a matter of fact, if the compressed lung was extensively diseased before the institution of the pneumothorax, it will become so filled with scar tissue after one or two years of treatment that it is of little use in respiration after it has expanded.

In certain cases thoracoplasty should be chosen in preference to pneumothorax. It is preferable to the operation of intrapleural pneumolysis, or the use of Jacobaeus' thoracoscope and cautery for adhesions, except when such adhesions are few and slender. The combination of either of these operations with artificial pneumothorax exposes the patient to the dangers and later complications of two distinct operative procedures. Thoracoplasty is preferable to attempts to stretch or tear, with high gas pressure, adhesions which may be near superficial lesions or cavities, because of the danger of lung rupture and rapidly fatal empyema.

Some surgeons with wide experience with both methods believe that thoracoplasty is preferable to pneumothorax, although a few are as yet firm in the belief they should not expose their patients to the dangers of a major operation if satisfactory compression is obtainable with pneumothorax.

*Indications and Contraindications.* — Only through active co-operation between internist and surgeon is it possible to select cases rationally and to avoid great disappointments. In brief, surgical compression may be said to be indicated largely for unilateral lesions, when all other treatment, including a sufficiently long sanitorium regime and attempted pneumothorax, has failed. From many experienced surgeons and internists comes the plea for earlier operation, especially for patients with incomplete artificial pneumothoraces who are not making satisfactory improvement.

Contrary to expectation, it has been found that even very sick tuberculous persons, with high fever, cavities, and much sputum, stand these major operations remarkably well.

*Choice of Operation.*—It is obviously impossible to present any hard-and-fast rules about the choice of operative technic. Most cases for whom operation is indicated will do best after

a two-stage "Sauerbruch," or a two-stage "Brauer." As the compression from the latter is the greater of the two, it is indicated for those whose lesions are extensive, and whose general condition is sufficiently good to withstand the somewhat more severe operation. It will be found in a certain minority of cases operated upon by either technic, that the compression has not been sufficient to control the disease. This is especially true of thick-walled cavities and infiltrative lesions that are unusually stiff. In such cases it will be necessary to supplement the original operation by a further removal of ribs posteriorly, or parasternally, or by pneumolysis, which is an extrapleural separation of the lung and both of its pleurae from the ribs and filling the space created with a gauze pack, or fat graft, or a pedicled muscle graft. In certain cases even this will fail to compress certain cavities. Cavity drainage is then indicated. It has been mentioned by Sauerbruch and others that a phrenicotomy as a preliminary to any type of operation is helpful.

Various deviations from the above described operations are indicated to suit certain special conditions, such as the partial removal of a few ribs to compress cavities at the base, certain cases whose lesions are limited to a small area, certain far-advanced cases on both sides, when the partial compression obtained may give so much improvement that later a more radical operation can be performed.

*Pre-operative Management.*—Patients should be carefully studied before operation in order to determine the condition of the heart. Patients should be taught to cough and empty their lungs, especially cavities, two hours before operation.

*Anesthesia.*—From Alexander's review of the literature it seems that ether, ether-chloroform mixture, nitrous oxide and local anesthesia have all been used. In America the anesthesia of choice seems to be local anesthesia combined with gas-oxygen. With the preoperative administration of ¼ grain of morphin and 1/100 grain of atropine, using local anesthesia, ½ per cent of novocain, and high vertebral block of the intercostal nerves with a free infiltration of the operative field, the anesthesia has been entirely satisfactory in the writer's cases. In no case has it been necessary to resort to a general anesthetic on account of pain or discomfort, although as many as nine or ten ribs have been resected at one sitting.

We wish to put on record eight cases of unilateral pulmonary tuberculosis that have been operated on at the Lewis-Gale Hospital by my associate, Dr. Whitman, and myself since 1916, with seven recoveries and one death, a mortality of 12½ per cent. All of these cases were referred to us by Dr. Everett Watson, of Mt. Regis Sanatorium. We wish to express our appreciation to Dr. Watson and his assistants at Mt. Regis for the histories of these patients, prior to their admission to the Lewis-Gale Hospital, which he has so kindly permitted us to use in compiling these case records.

In Case I, which we report briefly, all ribs except the first were removed.

*Case I.* Mrs. G. C. M. Housewife. Age fifty. Admitted October 9, 1915. Advanced left side involvement, complicated by tuberculous empyema. Marked emaciation (weight sixty-four pounds), temperature 102° to 103° daily, severe cough and profuse, purulent expectoration. No improvement and in December resection was done at the sanatorium, as patient was too ill to move to the hospital. Following this, there was some amelioration of symptoms, but the drainage continued and during the following year the second to the eleventh ribs inclusive were removed in their entirety, under local anesthesia, in several stages. There was gradual improvement and for the past seven years patient has done own housework and enjoyed good health, though at times there is still a slight drainage.

In 1920, four years later, we operated on the second case.

*Case II.* Mrs. M. E. C. Housewife. Age twenty-two. First seen by us in February, 1920. Tuberculosis had been diagnosed in March, 1914. Right lung had been collapsed and allowed to re-expand. Following another breakdown in September, 1919, she again took sanatorium treatment, but the lung at this time could not be deflated and her physician had advised thoracoplasty. At this time patient was running temperature reaching 100° to 101° daily, severe cough and profuse sputum, which had an offensive odor not unlike that of a pulmonary abscess. X-ray examination in April, 1920, revealed a dense tuberculous infiltration of all of the right lung, most marked at base, with two cavities in the 5th and 6th interspace in posterior scapular line; there was also fibrosis in the left, back of 1st and 2nd in-

terspaces, using anterior markings. This agreed fairly accurately with the physical findings. Under local anesthesia the 10th, 9th and 8th ribs were removed *in toto*, and several weeks later the 7th, 6th, 5th and 4th. Compression bandages were applied and a fair degree of collapse, where most needed, was attained. There was some temporary improvement, but the contralateral lung went bad and she died two years later.

This case emphasized the importance of careful selection of patients for thoracoplastic collapse.

We next had two cases of intra-pleural pneumolysis. In the first (Case III) a broad band of adhesions, which held open a large cavity, was severed by the open method. A perfect collapse was attained, but there was a stormy convalescence. For three and a half years the patient has been comparatively well but symptoms reappear when the lung re-expands to any extent.

The other (Case IV) was collapsed because of a large hilum abscess. This patient, a physician 54 years old, obtained a good collapse, but a short while later developed ulcerative colitis and died. Autopsy confirmed both diagnoses.

*Case VIII.* V. E. T. Age twenty-six. Male. Occupation, clerk. Admitted to the hospital April 14, 1924. Went on a camping trip in summer of 1917. Lost about six pounds and began to tire out easily. Was admitted to State Sanatorium in North Carolina, in December, 1917, where he remained until May, 1918, then he returned home and did light work until December, 1918. Had influenza February, 1919. Continued to do light work until he had a hemorrhage in February, 1921; then went to bed at home for six weeks. Shortly after getting up he began running a temperature, and in September, 1921, returned to the State Sanatorium, where he remained until June, 1922. He had sanatorium treatment continually until his admission to the Lewis-Gale Hospital April 14, 1924, a period of seven years. His chief complaint on admission was cough and expectoration of pus, with temperature, and accelerated pulse, loss of weight and poor appetite. Had had chronic cough and expectoration of large quantities of pus and blood streaked sputum at times since 1917. First pulmonary hemorrhage was seven years ago. Had two since then. Occasionally had remission of cough and gained weight, but periods of improvement did not last long. At time of admission he was having night sweats, was fifteen pounds underweight, and coughing a great deal.

This case was carefully worked out by Dr. Watson, diagnosed as unilateral pulmonary tuberculosis of the left lung with a very slight involvement of the apex of the right lung and advised to have an extrapleural thoracoplasty done on the left side. Under local anesthesia, through a long incision parallel with the erector spinae muscle, sections of all of the ribs on the left side were removed from the second to the eleventh inclusive. He stood the operation splendidly and apparently had little shock when he left the operating room. The following day the patient developed dyspnoea and rapid pulse. Two days later moisture appeared in the contralateral lung, growing progressively worse, and he died on the ninth day.

This patient died because in our enthusiasm we over-estimated his endurance and did too much at one operation. I report this case to emphasize the fact that too much can easily be done at one operation, and that in our opinion parts of not over four or five ribs should be resected at one sitting. In ten days to two weeks more ribs may be removed and two or three weeks later the operation completed. When this precaution is taken, the operative mortality will be exceedingly low. If the operation is done as described, laying stress on the importance of doing it in stages, and the cases are properly selected, only those being operated on which do not respond to pneumothorax, roughly speaking 35 per cent can be cured, 30 per cent improved and probably 35 per cent uninfluenced. With this method of treating unilateral pulmonary tuberculosis we are able to cure and improve 65 per cent of patients who, if left alone, will soon die.

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## DELAYED SECONDARY HEMORRHAGE FOLLOWING THE OPERATION OF TONSILLECTOMY.*

By J. WARREN WHITE, A. B., M. D., Norfolk, Va.

Primary and secondary hemorrhage is a matter of prime importance, so long as the operation of tonsillectomy is done. Hemorrhage accompanying the procedure may be classified as follows:

*Read before The Eye, Ear and Throat Section, Norfolk County Medical Society.

1. Primary hemorrhage at the time of the operation.

2. Secondary hemorrhage coming on a few hours to twenty-four hours after the operation. These cases are really not secondary at all, but are simply a continuation of the hemorrhage that occurs at the time of operation and has not been properly controlled.

3. Delayed secondary hemorrhage coming on two or more days after an operation.

Very little is mentioned in literature about delayed secondary hemorrhage. It is always referred to as very rare and easily controlled and usually ceases spontaneously. Quoting from Coakley, "In case secondary hemorrhage does take place it is only necessary to remove clots from the tonsillar fossa and insert a ball of gauze and hold it there for a few minutes with the finger or suitable forceps. We have never in all of our operative experience seen a case of tonsillar hemorrhage that could not be controlled in this manner." Quoting from Loeb, "Secondary hemorrhage occurring in two to five days after operation is not frequent and is due to a detached slough or erosion which leaves an open vessel. It usually ceases spontaneously. Pressure should be used whenever it occurs and the patient put to bed for a few days. If it continues in spite of pressure, the pillars should be sutured over a pad of gauze or the bleeding vessel ligated."

Seven cases are reported that have occurred in my own practice, and three of these cases were hemorrhages of a very alarming nature. Before this, delayed secondary tonsillar hemorrhage was never taken very seriously as it usually ceases spontaneously, but as the years of my practice of laryngology have increased the greater becomes my respect for delayed tonsillar hemorrhage.

The usual cause assigned is a detached slough or erosion, but nothing definite in a prophylactic measure is mentioned. Preventive measures are most successfully accomplished:

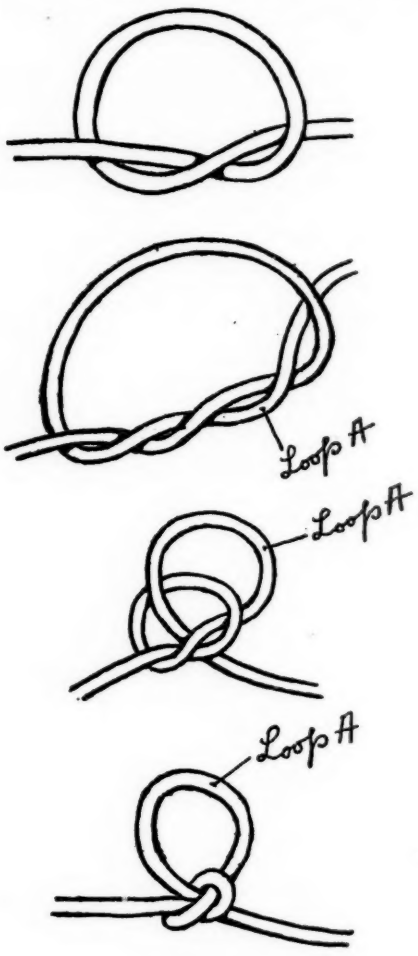
1. By a careful history of the individual case, a physical examination, and the determination of the clotting time of the blood previous to any operative procedures.

2. The ligating of all bleeding points. The tonsillar fossae should be dry before leaving the table.

3. Rendering the tonsillar fossae more aseptic by applying fifty per cent normal tincture of iodine on a cotton pledget.

The technique in ligating makes it simple and easy and is after the method described by Coakley with the exception he uses a slip knot to make the loop.

*Knot.*—A straight or curved hemostat is used to pick up the bleeding vessel depending upon its location. Cat-gut makes the best ligature, but linen or silk may be used if preferred. The loop should be large enough to slip over the handles of the hemostat holding




the vessel. It is important that the knot should be drawn tight enough to make the free part slide with friction. The non-slip part of the loop is grasped with slightly curved forceps close to the knot and the free end cut off close to the forceps. The loop now is placed over the handles of the hemostat. The

free end of the loop in one hand and the forceps in the other hand grasping the non-slip part of the loop makes it easy gradually to lessen the loop in size by pulling lightly on the sliding part. The loop is lessened in size and with the forceps it is placed over the end of the hemostat and the free end in the hand is drawn tight. The hemostat is removed and the free end is tightened slightly more. The free end of the ligature is cut close to the knot.

Delayed tonsillar hemorrhage is undoubtedly due to an infection which causes a sloughing of the vessel before the intima has become fully sealed. The vessel then opens again and further hemorrhage takes place, which may cease spontaneously or may be of a very alarming nature requiring the most skilful attention to control. If the clotting power of the blood is high, means should be taken to improve same before undertaking the operation. This may be accomplished in most cases by the administration of calcium salts. Some surgeons go so far as to ignore entirely the clotting time of the blood and operate regardless. If the cases reported had had a faulty clotting time, doubtless my difficulties in several of them would have been greatly increased.

From one's personal experience, as delayed tonsillar hemorrhage is not so frequent, it would be hard to show that any particular method of prevention had any value. The method suggested, however, is along the line of surgical principles adopted elsewhere.

### Report of Cases

1. Mrs. N., wife of a physician, age 42 years, gave a history of rheumatism for several years. She had an abdominal operation three years previous to this time, and gave no history of excessive bleeding. Physical examination negative. Urinalysis: no albumen, no sugar. Blood: hemoglobin seventy-five per cent; coagulation-time four and one-half minutes.

Tonsils were removed under one per cent novocaine with adrenalin, with very little loss of blood. The operation was performed in the hospital, and she remained three days. There was practically no bleeding after the operation and on her discharge from the hospital there was an exudate covering each tonsillar fossa. She left the city and on the sixth day after the operation I was called on the long distance phone and told that during the night she awoke with her mouth full of blood and since that time had continued to bleed very freely and that the physician was unable to control it. She was brought in on the train and taken immediately to the hospital. The bleeding was entirely from the left tonsillar fossa. I saw her at 4 P. M. and remained with her until 9 P. M. before the hemorrhage was controlled.

2. Mr. J., age 34 years, gave a history of sciatica and frequent tonsillitis for several years. Physical examination was negative. Urinalysis: no albumen, no sugar. Blood: hemoglobin eighty per cent; coagulation-time three and one-half minutes. Tonsils were removed under one per cent novocaine with adrenalin, with very little loss of blood. The operation was performed in the hospital, and he remained one night. At 4 A. M. on the fourth day after the operation he was awakened by a hemorrhage from the mouth. I was unable to control the hemorrhage at his home and he was removed to the hospital. The hemorrhage was coming from both tonsillar fossae, and was very profuse. I remained in the hospital with patient until 11 A. M. It was with great difficulty that the hemorrhage was gotten under control. The hemorrhage was not checked all at once but gradually and he continued to bleed for several days before the bleeding stopped entirely.

3. Miss C., age 54 years, gave a history of rheumatism. Physical examination was negative. Urinalysis: no albumen, no sugar. Blood: hemoglobin seventy-five per cent; coagulation-time three minutes. Tonsils were removed under one per cent novocaine with adrenalin, with very little loss of blood. The operation was performed in the hospital and she remained five days, and then left the city. Examination at the time of her discharge from the hospital showed a white exudate covering each tonsillar fossa. The seventh day after the operation she had a slight hemorrhage and a physician was called but the bleeding stopped spontaneously after a clot had formed in the tonsillar fossa.

4. Mr. J., age 19 years, gave a history of tonsillitis. Physical examination was negative. Tonsils were removed by the Sluder method under ether anesthesia with less bleeding than usual. He remained in the hospital one night and the next day went home. The third day after the operation at 4. P. M. I was called to the home for a severe hemorrhage from both tonsillar fossae. After three hours' work, not

being able to control the hemorrhage, he was taken to the hospital, and it was with great difficulty that the hemorrhage was checked. It was, however, the next day before the bleeding was absolutely controlled.

5. Mrs. McG., age 29 years, gave a history of frequent tonsillitis and rheumatism for two years. Physical examination was negative. Urinalysis: no albumen, no sugar. Blood: hemoglobin eighty-five per cent; coagulation-time three minutes. Tonsils were removed under one per cent novocaine with adrenalin, with very little loss of blood. She remained in the hospital two days. The sixth day after the operation at 4 A. M. she was awakened by the blood in her mouth. I was immediately notified and had her removed to the hospital. The hemorrhage ceased spontaneously.

6. Mr. D., age 32 years, gave a history of rheumatism for several years. Physical examination was negative. Urinalysis: no sugar, no albumen. Coagulation-time three and one-half minutes. Tonsils removed under one per cent novocaine with adrenalin, with very little loss of blood. He remained in the hospital one night and then went to his home. Seven days after the operation he was re-admitted to the hospital for hemorrhage. The bleeding was only from one side and after the clot was removed and pressure applied with a sponge, the bleeding was controlled.

7. S., age 9 years, gave a history of frequent attacks of tonsillitis. Examination showed enlarged cervical glands; physical examination otherwise negative. Urinalysis: no albumen, no sugar. Tonsils removed by the Sluder method under ether anaesthesia. He remained in the hospital one night and was then taken home. Three days after the operation, he was awakened during the night by the blood in his mouth. I was called to see him, but the hemorrhage ceased spontaneously after a clot had formed in the tonsillar fossa.

The cases I have reported occurred during the course of a practice of eight years, and, although they are rare, it makes us more apprehensive about allowing recent operative cases to leave the city.

### Conclusions.

1. From the cases reported, delayed tonsillar hemorrhage is not prevented by the coagulation-time of the blood being within the normal limits.

2. It occurs when the operation is performed under general and local anesthesia.

3. It occurs when the operation is performed under ideal conditions in the hospital.

4. It is undoubtedly due to an infection. However, when it does occur, the hemorrhage is more easily controlled if the clotting time is normal.

5. According to the surgical principles adopted elsewhere, the complication will be minimized if all bleeding points are ligated, thereby making the tonsillar fossae dry before leaving the table and rendering the fossae more aseptic by applying fifty per cent normal tincture of iodine on a cotton pledget.

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816 *Medical Arts Building.*

## THE RATIONAL TREATMENT OF PNEUMONIA.*

By WARREN T. VAUGHAN, M. D., Richmond, Va.

The facilities of hospital practice permit more careful study of pneumonia than is possible in general practice, and we must therefore look to the hospital workers for most advances in therapeutic procedure. Nevertheless, it is the general practitioner who has in charge by far the greater number of individuals ill with this disease, and it is well worth the latter's time to keep in touch with newer therapeutic developments so that they may be applied in the home. Fortunately, most of the recent improvements in treatment can be utilized in the home as easily as in the hospital. I shall first discuss general therapeutic measures and later turn for a moment to some of the more recent observations. My discussion will have to do particularly with lobar pneumonia, but from time to time I shall refer to bronchopneumonia, particularly that type which appears in epidemic disease.

The diagnosis having been made, the first consideration is the insurance of adequate rest, and supportive treatment. Rest, both physical

*Read before the Southside Virginia Medical Association, in Petersburg, December 9, 1924.

and mental, is all important. Those of us who saw epidemic pneumonia in the army well know the disastrous effects of evacuation to base hospitals of cases diagnosed as influenza-pneumonia. Those allowed to remain even on the stable floor of their billets, and made as comfortable as possible, frequently did better than milder cases who were transferred many miles to the luxury of a hospital bed.

In securing adequate rest, the services of a nurse are all important. It is usually the nurse who pulls a pneumonia patient through to a successful convalescence. The doctor insures all facilities for a successful fight but, without the aid of a well trained nurse, the physician and the patient are both working under a decided handicap.

Rest in bed with fairly abundant, easily assimilated food and plenty of liquids is the first essential. Whether the patient lies flat or is supported on a back rest is governed by his comfort. Some patients rest easier one way, some the other. The use of a pneumonia jacket to limit chest excursion depends upon the severity of the pleuritic pain. The patient should not be examined oftener than once a day and the room should be cleared of anxious, long-faced relatives. Blistering does no good and interferes with careful chest examination. The same is true of strapping.

The employment of open-air treatment varies with the type of pneumonia. In a long series of cases at the Children's Hospital in Boston, it developed that the death rate and the incidence of complications were practically identical in two series of lobar pneumonia, one treated indoors, the other outdoors. As a rule, however, those patients with lobar pneumonia treated in the open air were less cyanosed and were subjectively more comfortable throughout the illness. In bronchopneumonia the case is far different. During the early days of the 1917 measles-pneumonia epidemic in the U. S. Army, when cases of bronchopneumonia with empyema were frequently mistaken for lobar pneumonia, treatment in cold, moist air was disastrous. The same held during the influenza epidemic. In bronchopneumonia with its extensive distribution of moisture throughout the chest, the windows may be thrown wide open to insure an abundance of fresh air but, if the air is not warm and reasonably dry, the patient suffers. In general we may say that in frank lobar pneumonia, open air treatment is preferable, but that in bronchopneumonia, the air must be warm and fairly dry.

In few other diseases is there such diversity of opinion as to the proper drugs to be employed. We hear of stimulation in pneumonia. Stimulation is favorably discussed in many of the leading text-books. In the majority, however, if recommended at all, it is advised only around the crisis. And yet how many of us have seen patients stimulated with various drugs from the minute the diagnosis is made up through and long past the crisis, even though the pain and increased carbon dioxide content of the blood are forms of stimulation, rarely equalled by the drugs administered. Strychnin is given, as a rule, for its effect on the cardio-vascular system and yet only poisonous doses influence the blood pressure. Camphorated oil is still frequently administered. It is a question whether it has any effect whatsoever beyond the purely local one. Alcohol has been used on the erroneous assumption that it is a cerebral stimulant. In a series of several thousand cases studied at the Massachusetts General Hospital over a period in which many forms of treatment were followed, it was discovered that, irrespective of other methods used, about half of the cases had received whiskey and half had not, and the death rate was approximately equal in both. Thus, if one feels the necessity, particularly for the peace of mind of the relatives for the administration of some drug at stated intervals, whiskey might logically be employed for its food value and as a placebo. But we shall see that there are more efficacious drugs. In the rare case where a respiratory stimulant is really indicated, caffeine is probably the best drug available.

Digitalis has been introduced in the routine treatment of lobar pneumonia, chiefly on the findings of Cohn, that in about ten per cent of cases there develops either transient auricular fibrillation or flutter. The patient is thoroughly digitalized during the first few days so that, if cardiac arrhythmia supervenes, no time will be lost in producing full digitalis effect. It is probable, also, that the drug has some effect on heart muscle as is indicated by changes in the T-wave of the electrocardiogram, in pneumonia cases. In lobar pneumonia there is, then, justification for the routine

use of digitalis, giving one gram in the first two days and repeating the course on the fifth and sixth days. On the other hand, we can produce rapid digitalis effect by intramuscular or intravenous injections, and there is equal justification for withholding the drug until indications for its use arise.

The one drug whose use in my opinion has tided over many a case of pneumonia, even at the crisis, is morphine or codein. The patient does not need stimulation, he needs rest. He is receiving plenty of stimulation from the pathologic condition itself. He has a long hard fight in prospect. If he does not receive adequate rest, his endurance will be insufficient. In my own work, I see that the patient sleeps at night, either with codein or preferably with morphine.

The administration of oxygen, particularly in cyanosed cases, is probably life saving at times. The more striking results are obtained in bronchopneumonia where there is considerably frothy exudate in the alveoli and extending up into the bronchi. During the war Hoover studied cyanosis and dyspnoea in gassed soldiers. Foam in the exudate of the alveoli interferes with the normal transfer of oxygen and carbon dioxide between the alveolar air and the blood. Any portion of the respiratory membrane which is covered by alveolar air foam is deprived of its normal respiratory function, both for the escape of carbon dioxide and for the absorption of oxygen. If a lobe of the lung is filled with this foam, the surface area for gaseous interchange is no longer the very large area of the respiratory epithelium of the lobe, but the cross section of the bronchus leading to the lobe—the surface area of the foam in the bronchus. Hoover showed that gassed soldiers, whose lungs contained much alveolar foam, when breathing pure oxygen, recovered within a few minutes from their cyanosis but obtained no relief from the associated dyspnoea. Within these few minutes the pure oxygen had been well mixed with and absorbed in the alveolar foam, thence gaining access to the blood and relieving the cyanosis. But the concentration of carbon dioxide in the foam remained the same as when atmospheric air was being breathed and the amount in the blood remained unchanged, so the dyspnoea persisted.

Stadie, among others, has been especially interested in the treatment of pneumonia with oxygen and has obtained promising results in both lobar and bronchopneumonia. Among his conclusions he noted that the use of an oxygen chamber in the treatment of pneumonia patients makes it possible to administer this gas for long periods of time under exactly known conditions. The medical and nursing care of the patient is greatly facilitated. Prolonged inhalation of oxygen varying from forty to sixty per cent appears to be without harm. Oxygen administered to intensely anoxemic patients almost immediately clears up this anoxemia. Cyanosis disappears with the anoxemia.

Barach has demonstrated the inefficiency of oxygen administration by the usual funnel method and has devised a simple portable apparatus which gives adequate concentration of oxygen. Oxygen given through a nasal catheter is fairly well utilized and causes surprisingly little discomfort.

Means and Barach summarize their observations on the symptomatic treatment of pneumonia in stating that the outstanding feature is the respiratory battle, with resultant great strain upon the respiratory and circulatory mechanisms. The patient is confronted with necessity for increased pulmonary ventilation and with a pulmonary bellows of reduced efficiency with which to accomplish this added ventilation. He has a greater ventilatory oxygen demand, with decreased facilities for obtaining it. Factors causing increased oxygen demand are the increased metabolic rate from pyrexia, acidosis, deficient circulation, and as we have discussed above, anoxemia. On the other hand the vital capacity of the lungs is decreased by consolidation, edema, plueral pain, and often, also by abdominal distention.

Besides the use of oxygen in anoxemic cases, these workers also recommend the administration of alkali to combat the more or less hypothetical acidosis. The urine is usually strongly acid from excretion of organic acids, and alkali is given until the urine is no longer acid, care being taken that an excess is not administered, with resultant alkalosis.

All cases of lobar and bronchopneumonia should have the sputum studied in a search for Type I pneumococcus. The value of immune serum in Type I pneumococcus infection is not universally conceded, but when one has observed time and again a fall of temperature to normal by crisis within twenty-four hours

after the starting of intensive serum treatment, one feels that there must be some logic to the procedure. Every case of Type I pneumonia should receive the benefit of immune serum. The patient should always be first tested for sensitization to horse serum.

On the contrary, serum should not be administered without preliminary typing, and polyvalent serum should not be used. If the case is not one of Type I pneumonia, the serum does no good and at about the time of crisis, when every available resource is needed by the patient to pull himself through, an attack of serum sickness may be the deciding factor in a fatal termination.

We anticipate further improvements in specific therapy from the use of pneumococcus antibody extract.

Vaccine treatment during the acute course of lobar or bronchopneumonia is mentioned only to be unequivocally condemned. The procedure as commonly employed is illogical and no statistics have been adduced to show definite achievements with this method. Rosenow, who was one of the first advocates of vaccine therapy, states emphatically that, although he still believes that the use of so-called sensitized vaccines may have a place in the treatment of the acute disease, the utilization of ordinary vaccines is entirely contrary to his teaching. A personal communication from a leading physician who has been particularly interested in focal infection, states that in his experience the therapeutic use of either stock or autogenous mixed vaccines subcutaneously administered has resulted in no appreciable benefit in the treatment of acute infectious diseases or in chronic general diseases.

Expectorants are illogical in lobar pneumonia. There is little inflammation of the bronchial mucosa and the adding of a mucous secretion to the serous exudate which the patient is raising only increases the work to be accomplished.

A most important function performed by the physician is in the early recognition and treatment of complications. A frequent and sometimes serious complication is the development of abdominal distention. Much of the patient's respiration is carried on with the diaphragm and, if the abdomen becomes distended, by so much will the respiration become further impeded. In his daily examination it is as important for the physician to examine below the diaphragm as above. Daily enemas given routinely from the onset are preferable to cathartics, because the latter are more liable to produce distention and to be followed by some degree of depression.

Time does not permit detailed discussion of the various complications which must be borne in mind, but chief among these are serofibrinous pleurisy and empyema. To a trained observer, X-ray examination is usually not neceessary for diagnosis, although of extreme value for following progress. Even relatively small pockets of pus can, as a rule, be recognized by one of sufficient experience in this particular field. I would caution against unnecessary and repeated needling of the chest, but insist that if one is relatively certain from his examination that fluid is present, a single negative result from thoracentesis is not conclusive.

## Summary

Rational therapy in any disease involves one or more of three modes of attack. The first is the removal of the cause whenever this may be accomplished; the second, the removal of the pathologic process resulting from the activity of the causative agent; the third, the relief of individual symptoms as they may arise in the course of the illness, whether they be due directly to the causative agent or whether they result from the anatomical changes in the pathologic process.

First, with regard to removal of the cause which in the disease under consideration is usually the pneumococcus: we must treat the disease as a contagious disease, bearing in mind that the pneumococcus may remain viable for over one month in the dust. It has been recovered from the dust of the room in which the patient is sick in fifty per cent of trials. The first element in treatment is then prophylactic so that we may prevent infection of others. This applies particularly to infection with fixed type pneumococci. Immune serum and antibody extract are remedial agents whose activity is directed against the causative agent. We have no thoroughly satisfactory therapeutic drug. Optochin or ethylhydrocuprein, a quinine derivative, destroys the pneumococcus, but in a certain number of cases has caused optic atrophy and its use is scarcely justifiable at present. It has recently been put upon the market in slightly altered form under a different name.

In the therapeusis of lobar pneumonia we

are unable to carry out the second procedure in rational therapy, namely, the removal of the pathologic process. There is no way in which we may physically remove, as by operation, the pneumonic exudate. In the case of complications such as empyema this may be done.

Under symptomatic therapy we may enumerate supportive treatment in general. Adequate rest, physical and mental, with sedatives as indicated; a light diet with forced fluid; daily enemas to prevent distention and, should this occur, the application of turpentine stupes; temperature baths only for hyperpyrexia; oxygen for the cyanosis, alkali for acidosis, digitalis for evidences of circulatory embarrassment; and, for pain, a pneumonia jacket, either hot water bottle or ice cap, morphine or codein; abundant fresh air for lobar pneumonia, warm fresh air in bronchopneumonia.

I would stress, particularly, careful observation for complications above and below the diaphragm.

707 *Medical Arts Building.*

## ECLAMPSIA NUTANS (SALAAM CONVULSIONS). REPORT OF CASE.*

By SAMUEL NEWMAN, M. D., Danville, Va.

Convulsions occur more frequently in infancy and early childhood than in any other period of life. To designate convulsions during infancy as *eclampsia infantum*, a term which is still found in some text-books on pediatrics, is not carrying our diagnostic acumen very far, and is not conducive to the giving our little patients the benefit of certain therapeutic procedures which have been evolved by the modern rapid development of pediatrics.

A complete analysis and differentiation of the broad symptom complex of convulsions in the light of highly specialized etiologic moments will be particularly necessary if one is called upon to state the prognosis of a case. It will be impossible for me to discuss here the very important chapter of convulsions in infancy. It is my object to present to you the case record of a very interesting and rare type of convulsions. The discussion of this case will carry with it also a brief outline or classification of convulsions from the etiologic standpoint.

### Case Report.

M. R. C., a white female child of eighteen months, was first seen in consultation with Dr. M. E. Hundley, Martinsville, Va., on August 15, 1924. She was a second, full term, normal delivery with a birth weight of six and one-half pounds. Was breast fed exclusively until the ninth month; weaned at one year. First tooth at six months; sitting up at seven months; walking at sixteen months; not talking yet; grasping and handling toys. During the fifth month baby swallowed a pin; passed it out in the stool without having caused any trouble. During the eighth month she had grippe and bronchitis. Child is on a rational diet.

*Present Illness.* During the first six months of the baby's life nothing abnormal was noticed. During the seventh month, child began to drop the head forward. This she did once a day and it was always accompanied with rolling of both eyes. Immediately after this spasm the child voided. This condition continued up to the thirteenth month. During the thirteenth month the child had such spasm after each nap, about three during the day. During the spasms the child would throw or jerk her hands and feet and, at the end, make a crowing inspiration. Child never got blue during such spasms. The intelligence, the mother thinks, is deteriorating; the child is not able to learn new things as she used to; does not speak, but is constantly making noises in plaintive tones.

During the fifteenth month the child was examined by a pediatrician. The thymus gland was irradiated twice with X-rays at an interval of three weeks; she was also treated for tetany. Soon after the X-ray irradiations, mother thought the condition improved; however, it soon returned to the way it was before treatment.

*Family History.* Mother is twenty-eight years of age, father is thirty-nine; no consanguinity. Father has an arrested case of pulmonary tuberculosis; suffers occasionally from insomnia. The first child is two and one-half years old and is perfectly normal. No history of insanity, alcoholism, epilepsy or lues given. Mother regards heredity on both sides as good.

*Physical Examination.* Color of skin and mucous membranes is normal; turgor of skin, and subcutaneous fat are normal; muscular development is good. No adenopathy of any kind; skeleton, genitalia, heart and lungs are normal. Liver and spleen not palpable. Nose, throat, and eye-grounds were examined by

*Read before the South Piedmont Medical Society, at Danville, Va., November 18, 1924.

specialist and were found normal. Examinations of the nervous, sensory and motor systems does not reveal abnormality. No stigmata of degeneration of any kind; circumference of head is three (3) centimeters larger than that of chest. Child does not speak; mental processes seem slow for child of this age. Urine contained pus. Temperature was practically normal. Spinal fluid Wassermann was negative; Roentgen plate does not show any enlarged thymus (at least, in width).

*Description of Spasm.* I waited for the child to go to sleep and for her spontaneous awakening. When the child aroused she sat up on the bed and fell over on her face in a series of six or eight motions, extending the upper arms somewhat rigidly outwards and backwards. The child did not pass any urine or feces during or after this convulsion or spasm.

*Diagnosis.* In attempting to diagnose any convulsions or spasm in infancy and childhood, it is best to make a mental or written outline of all the possible causes of convulsions or spasm and then see, from the evidence obtainable at time of first examination and subsequent examinations, into what class and subgroup the particular case may fit. All convulsions may be divided into three main groups, as follows:

I. *Organic Convulsions.* Convulsions occurring under this group are conditioned upon a lesion or inflammation in the central nervous system. The subdivisions are:

1. Inflammatory conditions of the brain. These are always associated with fever, at least at the beginning of the trouble.

(a) Meningitis (various types).

(b) Encephalitis (various types).

(c) Lues of the brain (in infancy it is manifested as hydrocephalus; in older children, as paralysis).

(d) Hydrocephalus chronicus (congenital or acquired).

2. Circulatory and vascular disturbances.

(a) Hyperemia.

(b) Stasis (in terminal stages of bronchopneumonia, heart defects, etc.)

(c) Anemia and circulatory asthenia of the brain.

(d) Emboli (in heart lesions, dipththeria, etc.)

(e) Hemorrhages (whooping cough, severe infections, lues).

(f) Thrombi.

(g) Sinus thrombosis (otitis, sepsis, and nutritional disturbances).

(h) Traumatic injuries.

II. *Functional Convulsions.* Convulsions classed under this group are caused by conditions *outside* the central nervous system. These are *very* frequent during the first three or four years of life, but not so later in life. This group may be subdivided thus:

(a) Endogeneous toxic convulsions (alimentary intoxication, uremia, etc.)

(b) Exogenous toxic convulsions (drugs, alcohol, metallic poisons, etc.)

(c) Hematogenous infections.

III. *Idiopathic Convulsions.* Under this heading are included all those convulsions which are due neither to a gross organic lesion in the central nervous system, nor to an assignable cause outside the central nervous system. The most that we can say under the present status of our knowledge is that the convulsions are conditioned upon an abnormal irritability of the central nervous system. Under this group the following are included:

(a) Tetany, or spasmophilia.

(c) Genuine epilepsy (grand mal and petit mal).

(d) Eclampsia nutans, or Salaam convulsions.

(e) Hysteric convulsions.

(f) Narcolepsy.

(g) Affected convulsion (tantrums).

From this classification it will be seen that our case belongs in the group of idiopathic convulsions. That this condition is of extreme rarity may be judged from the fact that a very careful search for a discussion or mere mention of eclampsia nutans revealed so far only two references in the English language, one by Crozier-Griffith[1] and the other by Thompson.[2] In German pediatric literaure I found only two references to this condition. In a work of 960 pages[3] specifically devoted to nervous diseases of infancy and childhood, no mention is made of eclampsia nutans.

The making of the diagnosis was enabled by witnessing the presentation of a few such cases by Prof. Zappert, in Vienna, and by a clear description of this condition by Finkelstein.[4]

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In looking for cases of eclampsia nutans one must be careful not to mistake it for spasmus nutans. Similarly, one must not mistake a case of spasmus nutans for eclampsia nutans. Finkelstein emphasizes very strongly the possibility of mistaking one condition for the other. Spasmus nutans is not quite so rare in pediatric practice, and in the larger clinics one may come across such a case quite often. Spasmus nutans is a condition in which continuous or intermittent bending or rotating of the head occurs occasionally, with horizontal or rotary nystagmus. When the head is fixed the spasm becomes more pronounced. The etiology of spasmus nutans will not be touched upon here; but it is very important to know the prognosis of either condition. Spasmus nutans is a harmless condition and it passes away with *certainty* after months of duration. The prognosis of eclampsia nutans is invariably bad. Finkelstein says: "The continued observation of the children affected with eclampsia nutans teaches that there is transition of this condition to epilepsy with or without idiocy, or a development of difficult organic brain lesions. There seems occasionally to be a relationship between this condition and syphilis."

In our case the relationship to syphilis is not borne out either by the clinical or the laboratory examination. As far as I know at present, January, 1925, the child's condition did not improve.

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## VINCENT'S ANGINA OR ULCERO-MEMBRANOUS TONSILLITIS—DIAGNOSIS AND TREATMENT.

By WILBUR M. BOWMAN, M. D., Petersburg, Va.

The purpose of this article is to compile in a concise form the more or less scattered abstracts on Vincent's angina and to bring to the attention of the physician an infection which is apparently infrequent, the reason being due undoubtedly to the fact that the cases are overlooked or wrongly diagnosed. This point could perhaps not be more strongly emphasized than to report briefly several such instances. An author states a case which was treated first as syphilis, later as diphtheria. Autopsy, however, showed the typical organisms of Vincent's angina in the throat. In another case a surgeon was about to operate on a colored patient for a necrosed jaw bone when it was suggested that the case might be Vincent's. Smears from the throat were examined which revealed numerous Vincent's organisms. Recently, a colored youth was sent to the hospital with a diagnosis of mastoiditis, but smears stained with methylene-blue showed the typical spironema vincentii and bacillus fusiformis.

*Nomenclature.*—Vincent's angina is the recipient of a wide and varied nomenclature. Some of the common titles are trench mouth, ulcero-membranous tonsillitis, ulcerative stomatitis, pseudomembranous angina, etc.

*Definition.*—A feebly contagious disease caused by an actively motile spirillum and a non-motile fusiform bacillus affecting the tonsils and uvula, less frequently the mouth and pharynx, or lips, and characterized by the formation of a yellowish-gray false membrane, and in marked cases ulceration extending into the submucosa, fetor of the breath, salivation, the constitutional symptoms being as a rule relatively mild.

*History and Bacteriology.* — Ulcero-membranous tonsillitis was first described by Vincent, and by him attributed to a fusiform bacillus which he described, although a spirillum was found associated with it. Vincent's observations have since been confirmed, and it has been shown that the spirillum is a degenerative form of the bacillus. Vincent's bacillus is about twice as long as the Klebs-Loeffler bacillus. It is thin, with pointed ends, sometimes bent, and non-motile; it does not stain by Gram's method. The organism is slightly swollen in the middle and consequently referred to as a spindle-shaped bacillus. The bacillus stains unequally and gives a granular appearance. The spirochete is very delicate and is much smaller than the treponema pallidum in syphilis. Its undulations are less pronounced than the syphilitic organisms. It stains much fainter with Loeffler's methylene-blue than the bacillus. The fusiform bacillus is occasionally found alone; the spirillum, never alone. The organism is found in smears from the affected tonsil, in making which it is recommended to go deeply into the necrotic tissue, since the superficial parts are crowded with other bacteria. It is grown with difficulty and only upon special media. The organisms may be easily demonstrated by staining the gently dried smears with Loeffler's methylene-blue solution for three to five minutes, washing off the excess stain, blotting, and then examining under the microscope with oil immersion lens.

In the examination of a case of Vincent's disease that has just recently developed, the slide will show numerous fusiform bacilli and a few scattered spirochetes. At the height of the disease the spirochetes and bacilli are equally numerous. After the case is put on treatment the bacilli become less numerous while there is a big decrease in the spirochetes. After continued treatment the slide will be negative.

*Predisposing Causes, Transmission and Frequency.*—Some of the more important predisposing factors which make possible a successful bacterial invasion may be enumerated according to Buehler as follows: 1. General neglect of oral hygiene; 2. Faulty crown and bridge work; 3. Poorly inserted fillings; 4. Traumatic mal-occlusion.

The disease is disseminated by direct or indirect contact, as from mouth to mouth, by drinking cups, eating utensils, tooth brushes, etc.

It is seen with greater frequency, especially since the World War. The disease is much more frequent in children over ten years of age than in those younger, and in children under ten it is very mild in form, with rapid recovery.

*Pathology.*—The pathological picture naturally depends upon the stage at which the condition is seen. You may get ulceration and sloughing of the gums, soft palate, tonsil, pharynx, or simply a yellowish-gray deposit on the mucous membranes. Cases have been observed in which the process caused a perforation of the hard palate or destruction of the pharyngeal wall and necrosis of the adjacent vertebrae. The inflammation resembles somewhat croupous tonsillitis. The tonsil is covered with a dirty, yellowish exudate which may be mistaken for diphtheria. There is superficial necrosis, and when this tissue is wiped away with a swab, bleeding occurs. The denuded area is soon covered by new membrane. The lymph glands at the angle of the jaw are usually swollen. The cheek may appear much swollen in well advanced cases.

More recent experiments in the country lead to the division of the infection into three phases:

1. An acute form characterized by inflammation throughout the mouth, intensified along the margin of the gums, which undergo sloughing, this stage being accompanied by pain.

2. The subacute form in which there is congestion of the gums and membranes of the mouth without sloughing or pain.

3. A chronic infection with little evidence of the disease save a fairly large number of the organisms underneath the margins of the gums.

From the usual pathological findings a writer has noted the following variations:

1. The bright red line of demarcation of the ulcerated surface instead of terminating abruptly may continue into the areolar mucosa.

2. The gingival margins may be intact and not necrotic, but the entire affected gum cyanotic, somewhat bloated, and extremely painful to touch.

3. In the margin of a flap of gum overlying a pre-existing pyorrheal pocket which is the site of acute Vincent's angina, the red line of demarcation is not visible. More than one bacterial examination may be necessary to find the organisms.

*Symptoms.* — The symptoms vary as to whether the condition is the acute, subacute, or chronic form. The acute form is accompanied by pain while the subacute and chronic forms are not as a rule. One of the distinguishing features to be remembered is that the constitutional symptoms which accompany other forms of tonsillitis are either slight or absent altogether in Vincent's infection. The patient may complain of sore and bleeding gums or slight sore throat on swallowing. The breath has a characteristic fetid odor and often there is profuse salivation. The enlarged cervical lymph nodes are usually tender. The systemic or secondary involvement that may be present depends entirely upon the length of duration of the disease, the virulence of the organisms, and the resistance of the individual. In cases involving the tonsils and which present engorged lymphatics the temperature is invariably above normal. It is well to bear in mind the fact that the pathological findings are far out of proportion to the symptoms.

*Course.*—The average duration of the disease is given as from one to three weeks for complete disappearance of all clinical indications of the disease. The writer obtained in one case, however, a permanent negative slide for the Vincent's organisms six hours after treatment was started and the patient was entirely free of all symptoms within three days.

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One attack is likely to be followed, months or even a few years later, by a recurrence. One author on the subject reports twenty-four healed cases out of twenty five within five and one-half days after a single injection of some arsenic compound. According to some authors, recovery from the ulcerative stomatitis of Vincent's infection may occur within eight to fifteen days. A few cases may reach the physician too far advanced for curative treatment, or others through mistaken diagnosis may result fatally. In a series of 125 cases of Vincent's angina an author reports three fatal cases.

*Diagnosis.*—The chief interest in ulceromembranous tonsillitis lies in the diagnosis, although it is not an infrequent disease. As a general rule the ulceration, sloughing, or membranous deposit, together with salivation, characteristic fetor of breath, enlarged and slightly tender lymph glands of the neck, the marked lack of constitutional symptoms in proportion to the pathological findings, and the demonstration of the bacillus fusiformis and spironema vincentii will serve to distinguish this disease from closely related ones.

A differential diagnosis must be made chiefly from *syphilis*, *diphtheria*, and *croupous tonsillitis*. The differential diagnosis between syphilis and Vincent's angina may be impossible until a positive Wassermann, a general rash, or other stigmata of syphilis make their appearance. The infection may be associated with chancre of the tonsil and in this case the tonsils are edematous and painless, but the disease alone has a characteristic odor, is ushered in with slight general symptoms, and is slightly painful. Furthermore, the organisms may be found by proper bacteriological methods. In diagnosing from diphtheria, we find in Vincent's angina that the exudate is soft and friable and has a great tendency to ulcerate the tonsils. Again, the lack of constitutional symptoms together with the bacterial examination will aid in distinguishing this disease from diphtheria. It is said that the spirochete and fusiform bacillus are found in one-quarter of the cases of diphtheria. Croupous tonsillitis is more often bilateral, painful, with general symptoms, and exhibits follicular plugs, while Vincent's angina is often unilateral and associated with superficial ulceration.

*Treatment.*—Since there is such a diversity as to methods and the numerous drugs used in treatment of this condition, the writer attempts to state in a few brief words those which seem to be, from an experimental standpoint at least, the most applicable and efficient.

In the treatment of 125 cases among American troops in France by a physician, best results were obtained by the local application of salvarsan and methylene-blue used alternately. A five per cent solution of picric acid has been recommended as efficient. Another author speaks of excellent effects following the application of carbol-fuchsin stain in infective diseases of the gums observed at the Naval Air Station, Pensacola, Florida. This treatment has been found very effective, even in obstinate cases, it is claimed.

Attention is also called to the striking success which has been obtained from the application of Churchman's mixture, which is composed of neutral acriflavine and genitan violet. While the dyes, neutral acriflavine and rivanol, both derived from acridine, are useful in the treatment of this disease, they are not so efficient as Churchman's mixture which is commercially known as acriviolet.

Another author reports successful treatment of twenty-five cases of ulcerative stomatitis due to the infection with Vincent's organisms in children over one year of age with an intravenous injection of some arsenic compound. In eight cases Boroman's solution was used locally in addition. One of the patients died shortly after the injection from an intercurrent disease. The lesions in the other twenty-four cases were healed on an average of five and one-half days after a single injection.

The local application of salvarsan together with the intravenous injection is a method used which is claimed to give the most satisfactory results. An author states, however, that there is not a uniform opinion as to the specific therapeutic value in the treatment of Vincent's with arsphenamine, as he has repeatedly had throat specialists tell him that this or that case did not clear up after "606" treatment. In a recent article a physician claims dramatic results in the treatment of the disease by intravenous injections of 5 c.c. of a one per cent solution of antimony and potassium tartrate. Several physicians recommend fresh sodium perborate solution as a mouth wash during the acute stage of Vincent's angina. This should be used at intervals of half an hour or less. Hydrogen peroxide diluted with a mild alkaline solution

may also be used, but it is not so effective as sodium perborate. In connection with this, local applications to the ulcerated surfaces are of value, but irritative drugs should be avoided. One of the arsphenamine preparations may be used, or an aqueous solution of iodine in combination with a twenty per cent solution of silver nitrate. After the acute stage subsides, the teeth should be thoroughly cleansed by a dentist, and sources of irritation removed; in some cases extraction of diseased teeth is indicated.

Another author describes the treatment of Vincent's angina with a saturated solution of sodium perborate and with the dry powder. This method was successfully used by himself and other physicians in El Paso, Texas, for ten years, where the disease is of comparatively frequent occurrence. A physician recently informed me that all of his cases of Vincent's angina treated with sodium salicylate, fifteen grains every three hours, in combination with a carbolic mouth wash have cleared up within a week.

The most successful treatment is one which avoids any destruction of tissue; whereas picric acid, silver nitrate, iodine, and a long list of antiseptics injure tissue, prevent the development of young granulations, and keep up an irritation which tends to prolong the disease. Sodium perborate is a perfectly harmless drug and one advantage over arsenic preparations is that it can be used as a mouth wash without injury to the teeth.

The writer has followed a routine in the successful treatment of a number of cases that have come under his observation at the Petersburg Hospital, and each case has been closely followed by bacterial examination, using Loeffler's methylene-blue as the stain. The organisms have permanently disappeared as early as six to ten hours after treatment was started as well as a definite, in fact, a marvelous change in the pathological picture. The method used is to put the patient to bed, use ordinary infective disease precautions, and give either a liquid or a light diet according to the severity of the infection. The following morning a saline cathartic is administered. The necrotic material is first removed as gently as possible with a cotton swab saturated with a mixture containing neutral acriflavine, five per cent, gentian violet, two per cent, and methylene-blue, two per cent. The free margins of the gums and all pockets should be washed out with this solution, a blunt needle being used. The use of the tooth brush should be temporarily discarded to avoid injury of the gums, using, however, as a mouth wash or gargle a two per cent solution of sodium perborate every half hour to an hour, best employed by dissolving one-quarter of a teaspoonful of the powder in two ounces of water at the time of using. Application of the dye mixture should be repeated three to four times a day as a mouth and throat swab until all clinical evidences of the infection have disappeared, following which the teeth are carefully scaled superficially; whereupon the sodium perborate solution is continued as a mouth wash and for cleansing the teeth with a tooth brush for approximately two months. It is most important to bear in mind the fact that the general pathological condition will long have cleared up and present an exceptionally excellent appearance, but the patient should never be discharged as cured until a negative slide is obtainable, thereby obviating a recurrence as well as transmission.

The systemic treatment is not to be neglected, and in those cases with systemic involvement the writer administers several doses a day of elixir salicylic compound. In severe obstinate, or far advanced cases, it is also advisable to use one or two intravenous injections of salvarsan.

After the disappearance of all clinical evidences of the infection, tonsillectomy is indicated as well as the removal of diseased teeth and all sources of irritation. Physicians are to be warned that operative work had best be postponed until making sure by the microscope of the absence of the specific organism.

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## CASE OF ENORMOUSLY ENLARGED ESOPHAGUS.*

By BLANTON P. SEWARD, M. D., Richmond, Va.

W. H. S., white, male, age 51, married twenty-eight years, came to the office of Dr. Manfred Call, with whom I am associated, on April 12, 1924. He had had "indigestion, stomach and liver" trouble for twenty-five years. Frequently he felt a "lump at the lower end of the breastbone." Hot salts on arising in the morning gave some relief. No pain was associated with the symptoms, though he felt pain through the left chest one year ago. Fifteen years ago his physician washed out his stomach regularly for one year. In February, 1924, he had an attack of "acute indigestion." At the same time he felt a lump in the left side of his chest, and his stools were dark. His general health was fairly good. He weighed 122 pounds, and he stated that this was the highest he had ever weighed.

Gastro-Intestinal History: At the time of examination his appetite was diminished. The empty stomach was comfortable except for the "hung-up feeling." Food relief was variable, often causing pressure, fulness and distention. He was troubled with marked flatulence, with eructations and passage of gas by bowel. There was no constipation, the bowels moving regularly twice a day. He also suffered with pruritus ani.

Cardio-Respiratory System: Dyspnea noted after exertion, marked pain in the left chest one year ago, occasional palpitation, and arrhythmia were the only significant symptoms elicited.

Genito-Urinary: Three or four voidings daily, none during the night. Voiding was accompanied with irritation occasionally, but there was never any pain.

In the organs of special sense there was nothing significant.

Past History: Typhoid fever in 1915, lasting four months and a relapse. Sciatica seven years ago, and again five years ago. Never had tonsillitis. He was susceptible to colds. One year ago he was operated on for fistula in ano by Dr. Terrell.

Physical Examination: Mouth, nose and ears were negative except for some scaling in the external auditory canals. Heart and lungs were negative. The abdomen showed tenderness in the right iliac region with cutaneous hyperaesthesia. Tenderness increased in left lateral posture. Slight lower right dorsal tenderness. Knee jerks were active. Rectal examination was negative.

Laboratory Examinations: Hemoglobin, 80 per cent; erythrocytes, 4,240,000; leucocytes, 5,000. Differential count: polymorphonuclears, 50; small lymphocytes, 46; large lymphocytes, 1; eosinophiles, 3. Wassermann was negative. Urinalysis was negative. Feces: Blood positive to the benzidene test, but negative to the guaiac test.

We did not feel that our findings were sufficient to account for the patient's symptoms, and we did not wish further labortory examinations untll an X-ray study could be made. Dr. Fred M. Hodges made the gastro-intestinal examination on April 18th, and I shall give his report:

"Esophagus—shows marked spasm of the cardia with extreme dilatation of the esophagus. Shows a retention of about 50 per cent in six hours, and a twenty-four hour retention of about 25 per cent. Do not believe the esophagus ever entirely empties itself. Could not get enough solution in the stomach to make a satisfactory examination, but found no pathology.

"There was slight tenderness over appendix area, but this was not marked.

"Gall-bladder and twenty-four hour colon examination negative."

The patient was sent to Dr. Chevalier Jackson, of Philadelphia, for esophagoscopy. On May 8th, endoscopy was done and the following findings reported:

"Thoracic esophagus enormously dilated.

*Reported at a meeting of the Richmond Academy of Medicine, December 9, 1924.

Mucosa chronically inflamed and covered with a pasty, yellowish covering. Lower portion of thoracic esophagus filled with whitish, pulpy material having the odor of stale food, with no odor of stomach contents. Floor of thoracic dilatation covered with too much pasty food for examination of hiatus." "Duration of operation: two minutes, seventeen seconds."

Second endoscopic examination on May 14th:

"Esophagus quite clean and free from food: an enormous pouch lined with chronically inflamed mucosa: much less pasty than at the last examination in the only portion previously inspected. Large folds crowd in from hiatal esophagus: they can be moved aside and the esophagoscope passes through the abdominal esophagus without hesitance." "Duration of operation: two minutes, three seconds."

"Esophagoscopic diagnosis: Preventriculosis."

Treatment: After the endoscopic examinations, hydrostatic treatment was begun. The patient swallowed a good sized, strong string, one end of which was attached to the vest while the other end passed through the intestine. On the first swallowing of the string, it did not enter the stomach during the ten days which elapsed. The body was manipulated, that is, bent alternately in different directions by the attendants. Finally, the string passed through the cardia. The string having passed through the pouch, a dilating bougie was threaded to the upper end, introduced into the cardia, filled with water, and allowed to remain there for two to three minutes, thus stretching the cardiac sphincter. He spent the next ten days at home with the string in situ, after which he went back for the second treatment. As it was not necessary for the string to remain in longer, it was removed after this treatment. Eight such treatments have been carried out, the patient swallowing the string the night before the dilating is to be done. After the third treatment the patient noticed marked improvement in his symptoms. During an interval of three months between each of the last two treatments, there was no return of his former symptoms.

As we wished to check the amount of dilatation, Dr. Hodges X-rayed him on October 28th, two weeks before the last treatment, and gave the following report:

"Esophagus almost completely empty in a few minutes. Shows nothing like as much dilatation as in previous examination."

This man now is symptomatically well, and the measurement of the esophagus shows its transverse diameter reduced to one-half its original size.

The unique features in this particular case are:

I. The long existence of the dilatation which was the cause of his indigestion. Whether the condition was congenital or acquired in early years is not known. However, there is no doubt but that the dilatation increased with years due to the cardiospasm and retention of food in the esophagus. When the stomach tube was used fifteen years ago it is most probable that the dilatation was washed out instead of the stomach.

II. The absence of the loss of weight. In spite of the retention of food in the esophagus for many hours, and the retention of some food all the time, yet a sufficient quantity passed through the cardia and his nutrition was preserved. In all reported cases we have reviewed, marked emaciation occurred.

III. The complete symptomatic relief gained by the hydrostatic treatments. After the third, there was marked improvement, and after the fifth the symptoms were completely relieved.

IV. The reduction of the dilatation to one-half its original size in less than six months.

V. The value of the X-ray. The condition had been obscure for years, and would have remained obscure but for the X-ray examination. After this was made, proper treatment could be directed, and after it had been carried out, the X-ray again rendered valuable service in checking up the amount of dilatation.

Many cases of idiopathic dilatation of the esophagus with cardio-spasm have been reported in this and European countries. As to the cause of the condition, we are lacking in a definite explanation. If we consider the anatomy and physiology of the esophagus, a more definite idea of its pathology may be brought about. The esophagus is supplied by the vagus and sympathetic nerves. These two nerves form a plexus in which groups of ganglion cells lie between the muscular coats of the esophagus. From this plexus fibers pass out to supply the muscle, while others go to the submucous tissue, forming a secondary plexus. The cardiac sphincter receives motor and inhibitory fibers from the vagus, and inhibitory

fibers from the sympathetic system. It is also supplied from an intrinsic plexus, plexus of Auerbach, which, as in other parts of the alimentary tract, is capable of regulating the movements of the musculature independently of the extrinsic nerves. The tonic contraction of the sphincter, which occurs when the stomach contains food, is done reflexly through the intrinsic plexus, the reflex being stimulated by the acid of the gastric contents. As the peristaltic wave passes down the esophagus, the lower portion relaxes and the bolus passes through into the stomach.

Many cases of esophageal dilatation are said to be congenital and live for years before symptoms arise. Probably in the majority, the dilatation is acquired. The explanation offered by certain German investigators for the dilatation is that there is a disturbance in the balance or reciprocal relations between the vagus and sympathetic nerves, or a functional disturbance of the local ganglion. Anything injuring either the nerve or the muscle may disturb the balance between the nerves. These investigators report autopsies in which they found degeneration of the vagus nerve.

*Stuart Circle Hospital.*

## X-RAY DIAGNOSIS IN GASTRIC AND DUODENAL ULCER.*

By L. FREELAND MAGRUDER, M. Ph., M. D., Norfolk, Va.

Last year I presented a paper before the Surgical Section of this Society on the X-ray diagnosis of gastric and duodenal ulcer, showing a series of plates on which the X-ray diagnosis of ulcers of various types had been made and confirmed at operation. Rather than repeat at this time the showing of plates, it might be well to consider the question from a different angle.

The upper right quadrant of the abdomen has been spoken of with much feeling and not without reason as "Hell's fourth acre." The complex innervation of the viscera is such that this region is pointed out by the patient to the examining physician in all types of abdominal pathology, in lung pathology, in pathology of the heart and aorta, as well as that of the central nervous system.

Patients suffering distress in the upper right quadrant who have not had a diagnosis made or who have been operated upon without relief are seen daily. Duodenal and gastric ulcers probably lead the field in causative pathology. All diagnostic aids, then, should be utilized in arriving at a correct diagnosis. What contribution can X-ray make in determining a diagnosis? The answer to this question is the purpose of this paper.

Every stomach examination should include a careful fluoroscopic examination of the chest. Adhesions at the costo-phrenic and cardio-phrenic angles, the diaphragmatic excursion, the size and position of the heart and aorta should be noted. By this routine, unsuspected pathology above the diaphragm is frequently demonstrated. The passage of the opaque meal through the oesophagus and its entrance into the stomach gives valuable information in many cases, not only as to oesophageal but gastric pathology as well.

The barium-filled stomach should be thoroughly studied under the fluoroscope both in the standing and in the prone position. The size, shape and position of the stomach should be noted. In passing, I would like to say in reference to the position of the stomach that I am of the opinion that it is a mistake to tell the average patient that they have a gastroptosis or enteroptosis. You can stand on the street corner and pick out the individuals who will show ptosis without the trouble of having them rayed. Unless the ptosis is responsible for delay in emptying time, it is usually not worthy of comment. Directing a patient's attention to ptosis is frequently productive of placing them in a neurotic class. A large number of plates, seldom less than twelve, should be made in the prone position, and one or more in the standing position.

It is estimated that about ninety per cent of gastric ulcers are located on the lesser curvature. If these ulcers involve only the mucosa, and are not indurated, they may escape detection altogether or may be only suspected by the functional behavior of the stomach. Ulcers with induration or scar tissue on the stomach margins, notably the lesser curvature, are as a rule easily diagnosed.

The small percentage of gastric ulcers on the anterior and posterior walls are often missed or diagnosed on presumptive evidence, such as delay in emptying time. Duodenal ulcers with induration present a fairly characteristic X-ray finding and are seldom missed. In a certain class of patients with high transverse stomach, the duodenal cap often fails

*Read before the Norfolk County Medical Society, October 13, 1924.

to fill well, and no opinon may be given as to its condition. In my experience, I have seen few cases which showed both a gastric and duodenal ulcer. This combination must be extremely rare. I should like to hear something on this point brought out in the discussion.

During the past few years there has been steady improvement in the technique of gastro-intestinal radiography, as well as a more highly developed acumen of interpretation. As time goes on there will be further refinements which will add to the practical value of this diagnostic procedure.

If one is interested in the advancement of X-ray diagnosis in gastro-intestinal pathology, they may look back to the work of the immortal Caldwell who "died that others might live," published in nineteen hundred and four.

In discussing the oesophagus, Caldwell, in this master work of the time, says, "The X-ray is seldom, if ever, of any value in the diagnosis of abnormal conditions of the oesophagus. The walls of this canal offer so little resistance to the rays that they cast no shadow." In discussing the abdomen, he says, "In the region below the diaphragm radiographs may be satisfactorily used for showing the lumbar vertebrae, for detecting stones in the kidneys, ureters or bladder and for detecting bullets. The stomach and intestines offer so little obstruction to the rays that they do not produce any shadows upon the plate." He remarks, further, "it has been suggested that the stomach be inflated with air, and that a little bismuth be insufflated upon its walls through an instrument such as is used by stomach specialists."

In a voluminous text of twelve hundred pages published a few years later by an author not so well known as Caldwell, we find a print of a bismuth-filled stomach which the author explains is "giving symptoms because of its fish-hook shape combined with ptosis." Yet in our present time it is quite evident that there is a glaring duodenal ulcer shown to which the author has not called attention in the explanatory note.

The distinction of being the first to administer an opaque meal for Roentgen examination of the stomach belongs to Dr. Francis H. Williams, of Boston. In 1901, he writes of his technique as practiced in 1897.

It is my opinion that an ulcer belonging in the surgical class is seldom missed by X-ray examination in competent hands. At the same time, I believe that many cases with ulcer involving the mucosa alone are missed and are permitted to advance, the patient having been given a sense of false security. Personally, I believe that a patient who has not been educated as to symptoms and who presents the classical symptom of pain and food relief should be considered as a probable ulcer case regardless of X-ray findings.

In conclusion, I would like to give you three quotations. The first is from an internist, Dr. Cabot, who, in an address before the recent meeting of the American Roentgen Ray Society in Boston, said, "In a review of my weekly clinic records I have found that the family history has had least value, and that the X-ray findings more than any other diagnostic aid, have led me to a correct diagnosis, yet I warn that the X-ray findings must not stand alone."

The second quotation is from one of my old teachers, Rudolph Matas, a surgeon, who has never written a sentence which might not be studied with profit. In an article published in September of this year, Prof. Matas writes, "But it is also certain that the benefits which have accrued from the very simplicity and rapidity of roentgenological diagnosis are not unmixed blessings. Here, as in other regions of the body which have been made translucent by roentgen rays, the tendency of the practitioner is to accept the verdict of the roentgen laboratory unconditionally, with little or no effort to correlate the findings of the laboratory with the clinical evidence, and not to question the possible fallacy of the roentgen interpretation. In this way the time honored Hippocratic habit of observation and the cultivation of the clinical sense which are the fruits of personal observation, and prolonged contact with the sick, are rapidly becoming lost arts. In this way again, the substitution of diagnostic interpretations based upon fluoroscopic images and roentgenologic films for the rational and methodical investigation of the patient's signs and symptoms, tends to dwarf the analytical and critical qualities of mind, and to blunt the keen perceptions so necessary to correct surgical judgment. It is, after all, the interpretation, and not the roentgenographic image that counts. When the roentgen picture

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allows of diverse interpretations, as is often the case, the laboratory report must be subordinated to the clinical facts. It is in the abdomen that the growing tendency of the internist and surgeon, to spare their diagnostic wits and transfer their responsibility to the X-ray department, is most apparent. It is the blind acceptance of the interpretation of the roentgenologist that is responsible in a large measure for the great and increasing surgical abuses, where the fallacies of X-ray diagnosis and the liability to erroneous interpretation are greatest."

In 1895, William Conrad Roentgen appeared before the Wurzburg Physio-Medical Society and read a paper entitled "Concerning a New Kind of Ray." This paper has been described as the brightest page in the scripture of science. On January 23, 1896, the proposal of that great anatomist, Von Kolliker, that the so-called X-rays be named after their discoverer, Roentgen, met with enthusiastic response.

In a short time the German Roentgen Ray Society was a live and enthusiastic body, having recruited to its membership many of the best minds of the Empire. The annual meetings were held in Berlin. Roentgen, an honorary member of this society, because of his distaste for acclaim, was not present at any meeting. In order that a meeting of the society might be honored by Roentgen's presence, it was decided that the fourteenth annual meeting should be held at Munich where the discoverer was living in retirement. Accordingly, the meeting was held in Munich, but the great Roentgen had passed to his reward a short time before. The first day's session was given over to memorial exercises. In the principal memorial address by a roentgenologist, Haenisch, appears the third quotation: "In our enthusiasm, however, we medical men must guard as rigorously against a false one-sided over-estimate of the value of our diagnostic adjunct as against a summary subordination of it by a preconceived clinical opinion.

"An uncritical estimate of the roentgen findings, divorced from the result of clinical examination, or a reading into it of things which the roentgenogram cannot show, involve a greater risk and more severe consequences than the entire omission of the roentgen examination. The roentgenogram is always correct, but it is not always interpreted correctly; more is demanded of it than should be. The roentgenologic demonstration of a pathologic process may fail, but to exclude such a process on this ground would be an error. In the ability to recognize its possibilities, still often narrowly limited, lies the art of the roentgenologist. A pathologic change may be shown in a roentgenogram, yet herein alone lies no proof that it is identical with the anatomical basis of the patient's complaint.

"We can thank the great benefactor of suffering humanity no better than to strive to employ rightly the instrument he has given us, and that is not always easy. Roentgenoscopy and roentgenography compose no *pons asinorum* of medical diagnosis. Medical art and diagnostic development are not decreased by it, but on the contrary, enriched. Also *nil nocre* must remain in the development of every technique, the supreme medical watchword."

## THE MEDICAL PROFESSION.*

By WILLIAM E. WARREN, M. D., Williamston, N. C.

Ladies and Gentlemen, Fellow-Members of the Seaboard Medical Association of Virginia and North Carolina: I appreciate with much gratitude your kind partiality in electing me to the office of President, and especially am I grateful when I consider with what unanimity this honor was conferred upon me. I only ask now your indulgence and patience while I endeavor to perform the duties of this office. The recurrence of anniversaries, or of longer periods of time, naturally refreshes the recollections and deepens the impressions with which they are historically connected. For the first time it is our privilege and very great pleasure to meet in the city of Rocky Mount and we should congratulate ourselves in having the pleasure of meeting in a community like this, which has always had the enviable reputation of being a most generous host.

We trust you are pleased with the scientific program, and just here allow me to express publicly my personal thans to Dr. Clarence Porter Jones for his wise council and persistent effort in our behalf. It is largely due to him that we have such an interesting program.

One year ago, at Newport News, there was delivered a presidential address which lifted the standard to such heights as to become a

*Presidential Address before the Seaboard Medical Association of Virginia and North Carolina, at Rocky Mount, N. C., December 2-4, 1924.

veritable stumbling block and rock of offense to all future aspirants in this line; and so, as this time and day demand a lowering in prices and rates, I am going to so lower the standard of presidential addresses that a wayfaring man, though a doctor, may indulge in such diversions with some hope of meeting the demands required. It is recorded in the "Holy Evangels" at one place, that "The Church had rest." The thought has come to me, would it not be good for our Society to have a break in the procession of our annual addresses and take a rest? Certainly, gentlemen, equipped as I am, I shall not tax your minds on this occasion with a heavy scientific display, for in a large measure these annual meetings are recreational, and, further, I am not so sure but that true courtesy would demand that the scientific emanations of this body are solely prerogatives of the membership itself.

Tonight as I look upon this splendid gathering of noble men and lovely women and ask the question, "what is the object of this annual assemblage?"—the answer comes back, "for the advancement of the science of medicine." I am thrilled beyond expression, frankly, so nearly beyond expression, that I fear I cannot even under such inspiration rise to the level of my desire to speak worthily on the subject I have selected for your consideration. I realize I have the honor of addressing a great and truly representative body of a learned profession whose career began in the twilight of fable, long before the authentic history had lifted that curtain of time, a profession struggling ever onward and upward until today its influence and power for good irradiates the earth. What shall my subject be? I have considered and discarded many fascinating topics; some of them no doubt have suggested themselves to your minds. Instead, I have chosen one, at the risk of being censured as immodest, which comprehends them all. The simple truth will be sufficient to emphasize the fact that my subject is "The Medical Profession."

Medical men who meet in the forum of medical societies and engage in scientific discussions and interchange of clinical experience are thereby better equipped for the discharge of the grave and responsible duties of their high calling. Under our republican form of government, free press, freedom of speech and act in religion, the legal profession by their association in legislative bodies and in litigations have presumed the masses of the people to become acquainted with the fundamentals of all laws and professions, knowledge of the medical profession until recent years being confined almost exclusively to its own members.

The field of scientific knowledge of the medical profession lies far out beyond the acquaintance of the great masses of the people, even of the most advanced civilization. And herein lies one of the greatest hindrances we have to encounter in our efforts toward the betterment of the general health conditions among the people.

The mutual relation of the profession and the masses brings a mutual obligation and there is an evergrowing demand for a better understanding between them. The medical profession exists not for its own sake, but for the common good of the people. The sufferings and needs of humanity called it into existence. The relation, therefore, between the medical profession and the public is a very important one. There are many things that should be and must be explained to the masses by the profession before it can do its greatest amount of good. Like all worthy professions, that of medicine has its peculiar code of ethics, and the responsible physician who is worthy of public confidence and patronage bases his career as a clinician upon what the profession believes to be a moral obligation to humanity, which it seeks to serve. The doctor in no small way is a public man, and therefore a public servant. As guardian of the health and lives of the people, it is but just that the profession stand for everything that is right and uplifting to the community. I believe the true profession stands for the highest ideals of life, and the truest moral standards among the people.

The ethical demands of the public upon our profession are fully justified. The close vital contact of the physician with the deepest and most sacred relation of life, a contact of which he is the master in charge, lays upon him the greatest moral obligation to the welfare of the race at large. To him is committed the most sacred secrets of private life, both of the individual and the home. Indeed, his close and vital contact with the masses in the greatest facts of life render him an important factor in the common welfare of our civilization. The humbug and the quack are very much in evidence everywhere, and the serious fact is that they are nowhere so well protected and so well enabled to do their mischievous work as they are under the cover of a profession that legiti-

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mately assumes to care for the health and welfare of the people. Here, because of the lack of correct information and the helplessness of the masses, is found the paradise of the quack, feeding like a vampire upon the lives of the suffering and the afflicted.

We must in all serious honesty guard with zealous care the sacred responsibility committed to our hands and, by continued search into the realm of sacred truth and by constant dissemination of scientific principles, drive the false pretender and quack, the parasitic fads of the day, from the field, and deliver suffering humanity from their ravages.

The profession has been subject to all kinds of indignities by the charlatan and patent medicine pretenders. These vampires that have sucked the blood of suffering humanity have grown arrogant and assumed for themselves all the virtues and wisdom of the age. Too often they arouse the passion of the ignorant and blind them to their real condition of health, leading them away from their only hope of recovery. However pious may be their pretensions, they are but murderers of confiding and helpless people, and the government should have the moral courage not to afford them protection of the law. The people who encourage them commit a crime against the race. The people who would enter the profession of medicine need to be impressed more fully with the importance and sacredness of the profession that enters so vitally into the common health and welfare of the country. Furthermore, the public should see to it that none but the high grade, moral, well-educated, with the highest ideals, enter into the profession of medicine. There is a righteous demand for wise and rigid legislation making the examination more rigid than they are now.

There should be uniformity of action among all the States. The higher the standard and the more rigid the demands made by the laws of the country, the better the protection of the people, and the worthier will be the men who shall constitute the profession. No practitioner worthy of the privilege of a standing in the profession will join the calamity howl from the ranks of false pretenders who extract their money at the price of blood when such necessary, such sadly needed, and such long delayed legislation is attempted. The protection of the profession by legislation is even a greater protection to the people. I venture to assume that in a very few years the people will demand such legislation as will permit none but honest, moral, and well-equipped doctors to practice the healing art. And in case of immorality and dishonorable conduct, they will demand the legislation that will disqualify the offender and revoke the license that gave him recognition in the profession.

There is no creature with any pretension of respectability so low in the estimation of any honorable and honest man as the man who traffics in the ills and afflictions of a fellow-man, or who withholds any remedy or agent (from the world) that might alleviate suffering humanity or save human life.

Under the advancement of enlightenment of the masses in matters of medical science, this long tolerated abuse—quackery—will in the future disappear, just as the cruel customs of society are disappearing before the advancement of the high civilization and enlightenment of today. There is advancement all along the line, but there remains much to be accomplished in bringing about the full co-operation and confidence that must exist between the profession and the people.

Too often it is the case that the very ones most sadly imposed upon join hands with the quack and help him fight against the advancement that true medical science is striving to accomplish for the people.

No profession has made such rapid progress within the last century as that of medicine. We are not discouraged when we find that it has been a constant battle in every country and in every age. The advancing light of truth dispels the darkness.

> "Truth on which depends our main concern
> That 'tis our shame and misery not to learn
> Shine by the side of every path we tread
> With such a lustre that he who runs may read."

When we come to the full grown day of scientific knowledge and the public more fully understands the science of medicine and the healing art, and superstition is buried in oblivion, then will the quack and the fake and the numerous fads which infest the land with their hurtful influence, take their flight. Then reason and common sense will reign supreme. With the dawning of the day of true scientific knowledge and the application of real scientific methods, there comes a charming story of progress, as step by step the ladder is climbed and medical science reaches the heights of the present day achievements so long sought for and its many victories.

Standing as we do today in the dawn of a new century and the most advanced light in the scientific world that humanity has ever enjoyed, one fact is evident: the century marks a growing disposition on the part of the medical world to prevent rather than to cure. The biologist and the other laboratory workers are pointing the causes and modes of transmission of disease and the medical profession is to look to the prevention of these causes. This phase of our work is bringing the physicians more and more in contact with each other and there is becoming a co-operative condition. Preventive medicine is the order of the day. A higher standard of enlightenment of the masses must result from it. The rise of the germ theory, which began with the research of Haller and others, and which theory has been demonstrated to the fullest satisfaction of the most exacting skeptics, has worked an epoch in the knowledge and treatment of disease. On Pasteur's demonstration in fermentation and putrefaction our present knowledge of germs is based; to immortal Jenner we owe the prevention of smallpox by vaccination; to Lord Lister, antiseptic surgery; to Von Behring, anti-toxin for diphtheria, which alone has saved countless numbers of lives. From him the serum theory sprung, which has contributed largely to the amelioration of diseases and the preservation of lives. The genius of Nott and Walter Reed solved the problem of yellow fever, which scourge cost the Southern States countless lives. The bubonic plague which in the middle ages practically swept all before it, is tamed and beautifully held in check by knowledge of its cause of transmission. The great "white plague," while yet unconquered, has lost much of its terror since it is now well known that seventy to eighty per cent can be cured if the cases are taken in the early stages of the disease. The handling of typhoid fever is much easier since we know better how to prevent it, and in this day and time if anyone should be so unfortunate as to have typhoid fever it is absolutely his own fault in neglecting to take the anti-typhoid vaccine treatment which is given to each individual *gratis*. The same thing is true as to scarlet fever, as a vaccine has been discovered to prevent that disease and no doubt this will be free to the public in a very short time. For these things we are very thankful, and to those who have so abundantly contributed to the unveiling of these truths, we humbly pay our most sacred reverence.

While we understand the nature of tuberculosis in a small way, the disease is yet unconquered. Measles and whooping cough are thorns in the scientific world; they rage unchecked, reaping a large harvest each year. Cancer! how shall we ever conquer it? There are problems regarding the internal secretions which will furnish food for our most brilliant minds. We have not explored it all, and there remains much to conquer in the fields where our greatest explorations are to be made. We are now just ready to achieve our greatest victories. The greatest field lies out before us almost as yet unexplored. We have but to see it and learn its boundaries from afar. Let us, therefore, move forward with each effort to better our profession, and give suffering humanity in some way something real, living lives of worthy emulation.

Again, I see a profession that is progressive as well as conservative. Consider for a moment the other learned professions. The lawyer and jurist look backward for precedent on which to base today's decision. The minister's work is based on principles and needs that are essentially the same from age to age and no profane hand can alter or add to what has been revealed. But the physician regards precedent as valuable only so long as new facts and new experiments do not show a better way. While the moral and ethical standard must ever remain the same, the medical mind is always open to receive further knowledge and is alert to discuss new truths. And, again, I see a profession rich in its beneficient results especially during the last century. Another has said that "you may search the scriptures of human achievements and you cannot find anything to equal in beneficence the introduction of anesthesia, asepsis and sanitation with all that includes. Diseases familiar to our fathers and grandfathers are fast disappearing from the face of the earth and modern medical measures have alleviated the pains, lessened the sorrows and lengthened the lives of millions." And the end is not yet. Discovery after discovery follows each other so rapidly that we know not what to expect next. This is the profession of which you are a component part; this is the work in which you are engaged. Again, I see as a conspicuous feature of the medical profession, charity—charity which is neither puffed up nor vaunts itself, that charity

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which is kind and covereth a multitude of sins. Over every highway, road or path, whether trodden by the humble country doctor or the most learned of the land, is written charity. Yes, even on the breast of every worthy physician it is engraved, and by this token he gains entrance into sacred recesses where angels fear to tread. I bow with reverential deference to those who are members of the sacred profession of the ministry, who devote their lives to the good of others. But even they are not admitted into the innermost lives of the people to the extent that the physician is. To the physician is laid bare the body with its infirmities, as well as its vigor, the soul with its vices as well as its virtues, the heart with its sorrows as well as its joys, the mind with its disappointments as well as its hopes. To him as to no other is lifted the veil that discloses the thoughts and passions that make life bitter or sweet. To no other is given the same power to mould the character, guide the destiny, and work the road to peace and happiness.

This medley, with or without your indulgence, must include a short survey of the times and the customs which exist today. Premillennium signs are in evidence on all sides. First, our government, so long stirred by the hands of men, has reached the hour when that burden must be shared by the hands and minds of women henceforth. This is a most important radical change, and the future must prove the wisdom of it. This is a case where the power behind the throne has become the power upon the throne. Will she any the less, when she comes into the full realization of what suffrage has put into her hands, cease to be the queen and guiding spirit of the homes of the land? "Lord, God of Hosts, be with us yet, be with us yet." Kipling says, "The female of the species is more deadly than the male." This is submitted without argument. However, I believe I can unhesitatingly assert that the history and events of all times and of all countries have proven that wherever her will, influence, and presence have been invoked, there has come uplift and better days.

Ere I close this rapt discourse, I want to bring to your perspective the picture of what I have always conceived to be the highest of man's exploits here below. I allude to the true heart-and-head enlisted, old-time and new-time family doctor, who in season, and out of season, has spent his life, or is spending his life, in the hours and by the bedside of those ordained to suffer. Our surgeons have wrought with marvelous skill and made the names of American surgery the envy of the world. But I am inclined to the belief that too many of our young men are unduly led away by the glamor attached to the achievements of the knife, and view the daily routine of the practice of medicine as dull and of secondary importance, unmindful of the fact that the greatest study ever presented to the real student of medicine is pathology, the knowledge of disease. Coupled with the latter is a consideration of physiology, the knowledge of the processes of the body in health, as well as a correct interpretation of the so-called symptoms in evidence when the harmony of health processes is disturbed by disease. A study of the physiological action of drugs affords an armamentarium to combat the inroads of disease. Upon these studies hang all the laws and the prophets which govern a medical man. Surgeons have glorified American medicine, and we shall ever have them with us. But the world will ever cherish the picture and glorify and magnify medicine as illustrated by men of the type of Wm. McClure, daring the elements and carrying relief to the suffering by day and night, to the hovel as well as to the palace, preferably on horseback with well-worn saddle-bags—a picture which should never fade from human memory and will incarnate both the horse and the rider forever.

With no hope of enlightening you, may I have the consciousness in a small way of having entertained you. Of one thing, however, I am certain, and that is that I have, by these presents, lowered the standard of presidential addresses sufficiently for all future time. It has been my aim not to seem merely clever, for one has said that, "cleverness, anyhow, is only the level of mediocrity today."

Again, I wish to thank you most cordially and profoundly. I shall ever cherish this, the supreme achievement of my life.

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## MASSIVE EXCISION OF SUBCUTANEOUS ABDOMINAL FAT.

### An Analytical Review of the Literature.

By AIME PAUL HEINECK, M. D., Chicago, Illinois.
Surgeon to the Chicago, Jackson Park, St. Paul and Frances Willard Hospitals.

The profession is not sufficiently acquainted with the benefits, cosmetic and physical, that can be secured by the operative removal of large masses of subcutaneous abdominal fat.

Fatty pendulous abdominal walls have been looked upon as natural, as irremediable and, therefore, have received but very little study. It has, however, been repeatedly and amply demonstrated that superfluous masses of subcutaneous abdominal fat can, with safety and with advantage to the patient, be removed by operation.

Fat in excess may be deposited either in the subcutaneous cellular tissue or in the muscular and fascial layers of the abdominal wall, or may be indifferently distributed in all the tissues intervening betweeen the skin and peritoneum. The abdominal wall may contain a layer of fat from three to four and one-half inches thick (4,5,20), even six inches thick (25). Jolly classifies abdominal fat accumulations as follows:

(a) The pendulous abdomen presenting changes in the muscular and fascial tissues of the abdominal wall.

(b) Subcutaneous fat accumulations not associated with much weakening or impairment of the abdominal wall.

(c) The combination of (a) and (b).

The essential anatomic characteristic of the morbid entity herein discussed is the pathological accumulation of fat in the subcutaneous cellular tissue of the abdominal wall. In all these cases the abdomen shows a symmetric, at times an enormous (9), increase in volume. The fat excess is present mainly in the lower, anterior and lateral infra-umbilical portions of the abdominal wall. This superfluous local fat deposit is usually, though not always, a part of general obesity (9,13). "All these patients were enormously fat" (17). "Patient on admission to hospital weighed 464 pounds. When on her feet, the abdomen hung down to her knees" (6). It may or may not co-exist with other, related or non-related, pathological changes in the abdominal cavity, contents or walls.

As many cases are reported with but few details, attempts to secure adequate and accurate data meet difficulties. A diligent search of the English, French and German literature* yielded seventy-seven operatively treated cases serviceable for analytical study. To these we have added eleven personal cases. We did not use the forty cases of Babcock (1) one hundred and three cases of Lathrop (14), and others that are too briefly reported.

*All the publications to be found at the John Crerar Library, Chicago, Ill.

All the patients were adults. In many cases the exact age is not reported. The youngest, at time of operation, was twenty-five years old (27); the oldest were fifty-six (21), fifty-seven (18) and fifty-nine years (31). In the other cases, the age is stated as follows:

| | |
|---|---|
| 26 to 35 years | 9 cases |
| 36 to 45 years | 18 cases |
| 46 to 55 years | 22 cases |

Excessive localization of fat in the abdominal wall is infrequent in men. In our series, there were six males (7,14,23,27,31) and eighty-two females. Flabby and sagging abdominal walls overloaded with fat are met more commonly in individuals who since early life have been corpulent. The most pronounced forms, however, are seen in multiparae, thirty-three cases occurring in multiparae, one in an eleven-para (21), one in a ten-para (12), etc. It also occurs in nulliparae (9,10,16,25,26).

Lack of space does not permit the discussion of the many complicating conditions that aggravate the discomfort and disability provoked by pendulous abdominal walls.

Redundant fatty abdominal walls, if uncomplicated, give few symptoms. These symptoms, however, both subjective and objective, are characteristic, are conclusive. All the objective symptoms are demonstrable either to inspection or by palpation. At first, pain and disability are slight. The condition progressing, they and the other associated symptoms increase in severity. "Not much pain at first; the swelling of the abdomen gradually increased as did also the shortness of breath and the great pain in the abdomen, in front as well as in the back" (4).

Pain is influenced by posture and is more marked with the patient in the erect posture. The pain is increased by all forms of exercise. It is lessened and in some cases disappears with rest in the recumbent posture. It often has the nature of a painful, dragging sensation, and is lumbar, inguinal and hypogastric in location. These patients are inactive (28): they become averse to all effort, there results a vicious circle for the increased inactivity leads to increase of the local and general adiposity. In women who near the menopause take on adipose, there not uncommonly forms a huge, pendulous roll of fat across the lower abdomen, below the umbilicus. This pendent fat-mass creates a crease, often madid and eczematous, located just above the symphysis pubis (13). In most patients, the continuous contact

and friction of the inferior cutaneous surface of this fat apron and the underlying regions determine an erythema, an eczema, an excoriation, an elephanthiasis (9) of the skin of lower abdomen, of the inguinal folds and in some cases of the upper part of thighs. Some patients present two distinct creases. All the subcutaneous tissues of the hypogastric and iliac regions take part in the formation of these folds which extend transversely from one lumbo-iliac region to the other and which vary in length and thickness. In the recumbent posture, the flabby fatty mass gravitates to either side and sags over the iliac spines and crests (25). The prolapsed tissues show impaired tonicity, impaired resistance. Nearly all the patients are obese: two hundred twenty-seven pounds (24), two hundred forty pounds (4), two hundred eighty-five pounds (13), three hundred fifteen pounds (Gibbon) (14).

This excessive fat-deposit hangs apron-like over the external genitalia and the upper portion of the thighs (12), may overlap the upper two-thirds of the thighs (28). "In the standing position, the abdomen hung down in a fold which extended to within two inches of the patella" (25). "The abdominal wall reached below the knees when the patient was standing" (14).

Other subjective symptoms and objective signs are enumerated in conjunction with indications for operation.

Pendulous fatty abdomen must be differentiated from diastasis of the recti abdominalis, with which it may be associated. If it be suspected that the recti abdominalis muscles are abnormally separated, the examination is best conducted with the patient in the recumbent posture. The patient reclining is told to elevate the head as high up as possible without the help of the arms. If the diagnosis be positive, this maneuver separates the inner borders of the two recti muscles from one another, causes a greater or lesser prolapse of the intestine through the gap and enables the examining hand easily to depress the superficial abdominal coverings into the abdominal cavity.

The careful clinician will not overlook or misdiagnose hernias (umbilical, inguinal, ventral, etc.) They frequently co-exist with pendulous abdomen. Their anatomical location and clinical characteristics are suggestive. Hernias give an impulse on coughing, often present a volume larger at times than at others; if intestinal, they give a tympanitic note on percussion. If no hernia be present, if there be no abnormal separation of the recti muscles, the fat mass can be easily raised from, and made to glide somewhat upon, the underlying resistant muscular wall.

In properly selected cases, large masses of fat can be removed from flabby, sagging, fatty abdominal walls when the excessive fat deposit—

1. Causes great annoyance and discomfort:
   a. Pain (11,16).
   b. Backache (24).
   c. Dyspnoea on moderate exertion, ascending stairs, walking, bending (27).
   d. Distressing irritation (3), inflammation of the skin; erythema (7); intertrigo (22); eczema (14); chronic inguinal excoriation (15).
   e. Pouch-like overhanging of a cumbersome, useless, fatty apron in front of the upper portion of the thighs (6,9,12).
   f. Undue fatigue (21) and painful dragging sensation from the weight of the mass (19).
2. Determines manifest disability:
   a. Interference with locomotion (27).
   b. Interference with marital relations (7).
   c. Interference with the exercise of one's calling (9).
      "Patient said that she was becoming a semi-invalid and insisted that she be relieved" (6).
3. Constitutes a physical handicap (13):
   a. Inability to assume comfortably, and gracefully the erect posture; waddling gait (13).
   b. Inability to attend to the toilet of the lower part of the body (13, 22,28).
4. Becomes an unbearable social handicap; patient is unwieldly, unsightly, incapacitated for recreation, not sick, not well (2,13). "The dragging sensation caused by the pendulous abdomen was so great that she was forced to keep off her feet as much as possible." (6).

Resection of large masses of subcutaneous abdominal fat is also justifiable and most serviceable:

1. In the obese, to lessen the tendency to hernia formation.

2. In operating for hernia in obese indivi-

duals, so as to obtain better exposure of hernial rings and hernial regions.

3. As an associated supplementary and terminal step to many abdominal operations: Hysterectomy (Marvel) (20); ovariotomy (9); cholecystotomy and cholecystectomy (31); appendectomy (24); uterine prolapse and retroflexio uteri (21). "In association with lipectomy, we have frequently drained or removed the gall-bladder, the appendix or have performed other abdominal or pelvic operations" (1).

4. As a preliminary step to many abdominal operations so as to facilitate intra-abdominal work (20); a small fibroid in an atrophic uterus, a retro-cecal appendix, a small gall-bladder tucked away in a deep fossa with a stone in the cystic duct, or, still worse, a stone in the common duct, etc.

5. In cases in which the careful fitting and wearing of an orthopedic apparatus is not otherwise feasible. "Lipectomy was done to facilitate the fitting and wearing of an orthopedic apparatus for the support of the strained sacro-iliac joints" (16).

The benefits secured from massive resection of superfluous subcutaneous abdominal fat are so evident, so manifest, and the dangers attending the operation are so negligible that even in the absence of any other pathological process calling for an abdominal operation, the surgeon should not hesitate to advise and to urge the excision of these useless, troublesome and cumbersome fat accumulations.

The risks of simple lipectomy, either performed alone or in conjunction with other operative procedures, are far outweighed by its beneficent results. It has been successfully performed at the same sitting with operations for the cure of hernia (umbilical, inguinal, ventral, epigastric, incisional), appendiceal, gall-bladder and uterine disease, etc. In the eighty-eight cases furnishing the subject-matter of this paper, only two deaths are recorded. One patient, operated upon for umbilical hernia and pendulous abdomen, died from embolism (29). MacLean's (16) patient, operated on for pendulous abdomen and incisional hernia, died from peritonitis on the fifth post-operative day.

Lathrop (14) operated one hundred and three cases of umbilical hernia. In fifty-seven of these, he removed some excess fat. In the remaining forty-six cass, he performed a regular lipectomy. He reports one death which occurred twenty-two days after operation. The patient, a man weighing 325 pounds, from whom twenty-two pounds of fat had been removed, did well for two weeks, then his kidneys began to fail and he gradually succumbed.

In twenty-four cases of our series, a simple lipectomy was performed (2,7,12,13,14,16,21, 22,23,25,26,27,31). In simple lipectomy, the operative procedure is limited to the massive retrenchment of redundant subcutaneous fat and overlying skin. The incisions extend through the skin and fat, down to the fascia and not beyond.

In the remaining sixty-four cases, the lipectomy either preceded or followed, but always at the same sitting, operative steps for the cure of:

a. An umbilical hernia (2,4,5,6,10,13,14,16, 17,18,21,28,29);

b. An epigastric hernia (3,31);

In a and b, the overlapping of flaps leads to local elevation or ridge formation. This need not disturb the surgeon. The fortifying of the abdominal wall has been accomplished.

c. A large ovarian cyst and umbilical hernia two cases (9,31);

d. A ventral hernia (Gibbon) (14);

e. An incisional hernia (15,24);

f. Uterine disease (uterine fibroid) (Marvel) (20);

g. Uterine prolapse (21);

h. Appendicitis (24,31);

i. Gall-badder disease, cholecystostomy or cholecystectomy (2,31);

j. Diastasis of the recti abdominalis muscles (15).

Lipectomy has also been performed:

a. To facilitate intra-abdominal work, by making intra-abdominal organs more accessible;

b. To assure a better adjustment of orthopedic appliances (16).

Different operative procedures are employed for the cure of the condition under consideration, each operator being partial to the method which has given him the most satisfactory results. Whatever technique be used, and it must always be adapted to the case at hand, it is all important, all essential that the integrity of the abdominal muscles, fasciae and properitoneal fat be fully respected. Only the skin and fatty mass immediately subjacent to it and directly in front of the fascia are to be removed.

The operation which we perform and recommend is entirely different from that performed

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by Creveling and others who, to restore the abdomen to normal size and contour, carry their incisions through the entire thickness of the abdominal wall into the peritoneal cavity. Bear in mind that we are not considering here prolapsus of all the abdominal coverings. We are only discussing the removal of excessive subcutaneous fat accumulations.

In the reported cases the amount of fat removed varies; and here it is well to note that many operators state with emphasis that they could, with much additional benefit to the patient, have removed more fat than they actually did. The completeness of the fat-removal is a measure of the freedom from fat thereafter of the part operated. Enough fat should be removed to completely eliminate soreness from chafing. It has been our practice to remove the mass in one or two pieces. Concerning the quantity of excised fat, different clinicians express themselves as follows: "Several pounds of fat and skin" (4). "From one-half to fourteen pounds" (1). "The mass was so long that as I held one end up high in my hands at breast level, the other end dragged on the floor and it was so heavy that it was difficult to keep my hold" (13). "The specimen removed was one yard and three inches long, one and one-half feet wide, three inches thick at the edge and weighed seventeen pounds" (5). "Removed a wedge of fat weighing thirty-two pounds" (Clark) (14). "The flap of belly-wall fat removed together with the hernial contents weighed forty pounds" (10).

After having performed several lipectomies, the surgeon experiences little difficulty in deciding how much fat it is judicious to remove. The removal of one large wedge-shaped fat-block, occasionally two, rarely three, usually suffices. As the patient lies in the recumbent position, the fatty mass gravitates to the sides and can be picked up, can be lifted up as a great ridge or fold lying across the abdomen. The operator grasping this mass in the center, pulls it up and away from the body and circumscribes it by two incisions, one passing a little above and the other a little below the lines of deflection.

It is preferable that the incisions be clean-cut, made with one or several long sweeps of a broad-blade scalpel or short amputation knife. The length of the incisions has little appreciable influence on the outcome of the operation. "The incisions were twenty-one inches long" (17). "Incision was twenty-seven inches in length; there were four hundred square inches of raw surface" (15). "After being sutured, the incision measured twenty-two inches in length from flank to flank" (4). "When stitches were removed, the abdominal incision had contracted until it measured only twenty-seven inches from side to side" (6). Patterning by slicing is bad practice. Small hacking cuts are to be condemned. The smoother the fat surface, the better the approximation. Two initial incisions usually fulfill all requirements. These two incisions converge into one upon the fascial layer, thus no undermined surfaces, no pouches for the accumulation of wound secretions are left. Sufficient skin must be left for approximation. Let there be no undermining of the wound edges.

In the reported cases, dissimilar incisions differing in type, in length, and in location were employed. Most operators used two transverse elliptical incisions joined at both ends (5,6,10,14,16,17, etc.) In some cases, the upper incision was supra-umbilical; in most cases, both incisions were made below the umbilicus. The incisions, starting at either the anterior, or middle, or posterior axillary line of one side, cross the abdomen and terminate at a corresponding point on the opposite side.

Castle (5) began his upper incision two inches lateral to the spinous process of the lumbar vertebra and carried it above the umbilicus, across the abdomen, to an analogous point on the opposite side. The ends of this incision were joined by a second transverse incision crossing the abdominal wall above the pubes. These two incisions outlined an ellipse. Cullen (6) circumscribed a large transverse elliptical area which, after removal, measured thirty-six inches from side to side and nineteen inches from above downward. Shallenberger (24), by means of a double infra-umbilical incision going from flank to flank, embraced an elliptoid area of skin 45 cm. long and 15 cm. at its widest part.

In selecting incisions, we are guided as to length, type and location by various factors: such as, the existence or absence of complicating conditions, the nature of the other indicated operative steps, the amount of fat to be removed, the patient's general condition, etc. For the excision of large wedge-shaped fat-blocks, we have adopted and recommend two transverse elliptical incisions, beginning well over on one side and extending to corresponding points on the opposite side. These two in-

cisions converge toward the fascial layer. Many other operators follow the same practice. If an abdominal section is to be performed at the same sitting, the fat is first removed by means of a double transverse incision. This having beeen done, one proceeds to enter the abdominal cavity by a vertical incision through the rest of the abdominal wall. Bullitt (4) completed his operation for umbilical hernia; then prolonged, in both directions and to both flanks, the horizontal incision which he had made. A second transverse incision joining the ends of the first incision was then made; at its mid-point, it was about seven inches below the first.

Transverse incisions have the disadvantage of increasing the already large waist measure and of leaving at each end of the wound an unsightly projection. To avoid these, Babcock (1) removed a small vertical ellipse of skin near each end of the transverse incisions. If tranverse incisions be used, the approximation and the apposition of the flaps is effected more easily, the liability to post-operative separation of the wound-edges is minimal, primary union (4,9,10,20,22,28) is frequent, delayed healing is rare (16) and long-delayed cicatrization is very uncommon.

Longitudinal incisions found favor with few clinicians. Frist (9) made two longitudinal incisions, 70 cm. in length, outlining an ellipse that extended from about a hand's breadth below the xyphoid cartilage to a hand's breadth above the symphysis. At their point of maximal separation from each other, each of these two incisions was fourteen centimeters external to the corresponding mammillary line. The wound edges having separated in a few places, healing was delayed. Spaulding (25) made an elliptical incision on each side of the median line. Each incision extended from just below the breast to the center of Poupart's ligament. He removed the integument and fat six inches thick down to the sheath of the abdominal muscles.

In some cases, we made two elliptical vertical incisions at each end of the transverse incisions and were thereby enabled to remove two additional wedge-shaped fat-blocks. Babcock (1) recomends removal of a vertical ellipse of skin and a vertical line of closure. He alters the shape of the ellipse so as to best contour the waist and upper pelvis. In order to remove a large amount of subcutaneous fat, he widely undercuts the skin. This practice is avoided and condemned by most operators. Schepelmann (21) uses a "lyraform" incision. I have had no experience with it.

Though multiple incisions, patterning by slicing, hacking cuts, undermining of wound edges, excision of vertical fat-blocks, are not conducive to the most aesthetic and satisfactory results, they have been practiced by some. For instance, Ballard removed fat and skin from above downward as well as from side to side. To quote his own words: "I removed an elliptiform piece of tissue down to the fascia extending from within three inches of the symphysis pubis and eight inches at its greatest width. I, then, removed two large V-shaped strips transversely from about the center of the perpendicular incisions."

Fat is a tissue of low vitality and special care must be taken that there be little or no accumulation of serous or sero-sanguineous fluid between or beneath the flaps. Retained wound secretions retard healing, invite infection. A drain is inserted at either end of the wound; if the wound be long, a drain may also be inserted at its center. Closure is effected by approximation sutures of silkworm-gut. For the exact apposition of the wound edges, we use linen. In these cases, I frequently advise the application of hot boric acid compresses to the operative wound for from two to three days; these fomentations are to be renewed every four hours. The drains are removed as soon as the discharge warrants it and the patient is kept in bed for about fifteen days. The result of the closure should be a smooth abdomen with a linear scar (7,13,27) and without any hanging folds (19). "The pendulous appearance being entirely removed and replaced by a simple large pronounced ridge" (4). Some patients during the first few post-operative days complain of abdominal tightness, of abdominal constriction (18). It calls for no special treatment.

## Summary

In suitably selected cases, the operative removal from the abdominal wall of large wedge-shaped masses of subcutaneous fat has the following advantages:

1. It is a safe and invariably beneficial surgical procedure. It has always been performed under general surgical anesthesia; never under local or spinal anesthesia.

2. It is always devoid of immediate or remote dangers to the patient; though the wound

be extensive, the hemorrhage is moderate and healing is good.

3. It is simple of execution and, if unassociated with another operative procedure, the technique is easy and the performance of the operation does not consume much time. It is all important that the incisions be carried to but not beyond the fascia.

4. It may be the only operation indicated and performed in the case at hand.

5. It is, at times, called for as a preliminary operative step to facilitate intra-abdominal work and to give better access to intra-abdominal organs.

6. It is not infrequently employed in conjunction with other operations. The operator retrenches an unwieldy, useless, pendent mass of subcutaneous abdominal fat and at the same sitting brings relief to, or corrects, co-existing pathological abdominal conditions.

7. It eliminates a physical handicap, effects a marked improvement in the patient's appearance and general well-being and procures complete relief from an unsightly, painful and disabling deformity (23).

8. It gives permanent results (17), if post-operative instructions regarding diet and exercise are followed. Adiopose tissue, when excised, never fully regenerates.

9. It secures the following benefits:

a. Diminution in weight. "At time of patient's departure from the hospital, she weighed seventy-five pounds less than at time of entrance" (5). On discharge, the loss in weight was about ninety-three pounds (9).

b. Freedom from discomfort, local and general, and from disability incident to cumbersome, burdensome, pendulous fatty abdomen (12,22).

c. Improvement in the patient's general appearance, the hippopotomal abdominal wall being converted into a straight front. Improvement in pose: body is no longer awkwardly balanced and gait ceases to be waddling. Patient is enabled to resume his or her occupation.

d. Patient, after its performance, can occupy a more normal, more natural and more useful relation to society.

e. The patient can be more active, can give better personal attention to the body, can give his or her work the necessary attention and necessary application (7).

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## TRAUMATIC RUPTURE OF THE INTESTINE—REPORT OF CASE.

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The case which I report, while unusual, is by no means unique. The patient, T. E. B., Jr., was a well-developed normal boy of 12 who had never had any serious illness. On April 14, 1924, he was playing in the schoolyard at recess, about 1 o'clock, when he was injured. While running he collided with another boy. The other boy's knee struck him

in the scrotum and he fell to the ground unconscious. He remembers no other details of the accident. He was carried into the schoolhouse, where he regained consciousness in a few minutes, but was unable to get up and join his class.

At 3 o'clock he was taken home in the school truck, and was seen by his doctor at 4 P. M. He then had normal temperature and pulse, no nausea or vomiting, no abdominal rigidity or localized tenderness, although he complained of severe pain in the lower abdomen. He was given morphine. Two hours later his pain was still intense; he had vomited once, and there was tenderness in the lower abdomen with slight rigidity. His temperature, pulse and respiration were still normal.

It was decided to bring him to the hospital and they started in an automobile at 9 P. M., reaching the hospital just before 3 o'clock the next morning, after a trip of about eighty miles.

Examination elicited these facts: Temperature 100 1/5°; pulse 96, respiration 22. He was fully conscious; his expression was good; his eyes were normal; his reflexes were normal, and there was no bruise or abrasion on his body. The scrotum and its contents were normal. The abdomen was moderately distended and was rigid throughout, but especially in the lower half. Tenderness was present over both lower quadrants, being particularly marked just internal to McBurney's point. Rectal examination elicited tenderness but no masses. Urinalysis was practically normal. Blood count showed 20,800 white cells, with ninety-three per cent polys.

An exact diagnosis seemed impossible but an exploratory operation was urged, with a probable diagnosis of some visceral injury, or possibly an unusually fulminating type of appendicitis. A lower right rectus incision revealed the peritoneal cavity extensively soiled with small bowel contents. All loops of the bowel were intensely congested and covered with flakes of lymph. The ileum, three feet from its termination, was torn completely across transversely; the two sections being held together only by the mesenteric attachment. Two inches above this tear there was a perforation of the bowel of the diameter of a lead pencil. The appendix was congested and covered with plastic lymph, but this was considered to be secondary to the general peritonitis.

The appendix was not removed. Six inches of the ileum was resected and an end-to-end anastomosis done. One Peple and one cigarette drain were inserted into the pelvis. He was badly shocked at the conclusion of the operation.

Post-operative course was stormy. Several days after recovery from the primary shock, there was a partial intestinal obstruction, relieved by removing the drains. Three weeks after operation symptoms of a right lumbar abscess appeared, but pus was not obtained until eleven days later. An abscess containing a pint was opened in the right flank and the cavity rapidly healed. There had been extensive infection and sloughing in the abdominal wound. Secondary suture of this healed cleanly and gave a fairly good immediate result. Further convalescence was uninterrupted and he left the hospital on June 12th after a stay of two months.

Examination on October 10, 1924, showed that he had regained his weight and strength, but there was a wide fascial defect in the abdominal wall, with considerable bulging. Perhaps something may be done to improve this later on.

The points prompting me to report this case are:

First: Its comparative rarity. Many surgeons have had one or more cases of traumatic intestinal rupture, but few of them seem to have been reported.

Second: The complete absence of any mark on the surface of the body that might indicate a serious internal injury.

Third: Recovery from operation undertaken as late as fifteen hours after injury. Each hour elapsing between the receipt of such an injury and its operative relief increases proportionately the risk to the patient.

## THE MANAGEMENT OF PREGNANCY.*

By C. P. OBENSCHAIN, M. D., New Hope, Va.

It is well for every practitioner of medicine to have a routine method of procedure when he is engaged to attend a woman in confinement. It is recognized by all that every case cannot be handled alike, but each patient has so much in common with the average case that the physician's education to certain fixed rules

*Read before the Augusta County Medical Society.

is to his advantage, and is well for the patient. The method can be varied to suit the peculiarities of any individual.

The ability of a physician is largely gauged in a community by his degree of success in the management of pregnancy and confinement. This is also a branch of medicine for the general practitioner not likely to be invaded by any quack or cult, pregnancy being no fictitious imagination of the woman in question, but a physiological process which can easily become pathological.

To save space, the various duties of the general practitioner are divided into heads, according to the advice of the professors at "our Alma Mater," from the advice of able obstetricians, and from experience:

*Education:* The physician, at all times an educator, must let the public know that during gestation a certain degree of professional attention is necessary. At times, many disorders and complications are likely to arise, and the woman's welfare and that of her future offspring depend in no small way upon the watchful care of the medical adviser.

*Diet:* As a rule, there is some disturbance of digestion and loss of appetite during the second and third months. In the diet, the preference of the patient may be largely considered. The irritability, caused by the increased absorption to meet the increased demand, may be combated in many ways; the best method in the hands of the writer is, during this period, to give food in bed before arising in the morning and between meals. Most foods, animal, vegetable, or fruit, which are easily digested are suitable. At times it becomes necessary to regulate the diet in order to save the kidneys, or to control in some measure the size of the foetus. In cases of excessive digestive disturbance, it has been found that the vomiting can best be controlled by giving before breakfast a teaspoonful of two per cent cocaine hydrochloride solution with five grains of cerium oxalate, this being decreased or discarded as soon as possible. The more modern duodenal tube has been used once with good results. Rectal alimentation has given no results. The bowels should be evacuated once each day, and if this cannot be regulated by a diet rich in fruits and fresh vegetables, it becomes necessary to resort to drugs. The salines and mineral waters give the best results.

*Exercise:* Moderate exercise is good for the pregnant woman. Automobile rides, walking, and doing house-work are suggested. However, rough roads, heavy lifting or any muscular strain and fatigue must be avoided. There must be good ventilation at all times. It is the experience of obstetricians that the woman who does moderate or even heavy work has the easiest delivery.

*Drugs:* All cases, as far as possible, should be manged by hygienic rules without the aid of drugs, which are mentioned here only to be condemned, with the exception, of course, in the abnormal cases.

*Clothing:* All clothing should be suspended from the shoulders with no pressure on abdomen or chest. If the abdominal walls are lax, a proper lifting belt is indicated.

*Care of Skin:* Much relief can be given the excretory organs by bathing regularly.

*Breasts:* The breasts and nipples must be prepared for lactation and nursing. Retracted or insufficient nipples must be pulled out by patient using thumb and forefinger. Toughening of nipples is best done before confinement by using alcohol daily and massaging with cocoa-butter. The care of the breasts is especially important in primipara.

*Sexual Relations:* While not harmful to some, it is with others, especially to those who have previously aborted. The pregnant woman should be advised against the possibility of infectious diseases. Sexual life is best prohibited during the last months of pregnancy.

*Kidneys:* The care of the kidneys and the watchfulness of troubles which the kidneys foretell is the most important duty of the woman's medical adviser. The woman should be advised in a normal case to send a sample of urine at least once each month, giving the average day's total. More attention must be given where this urine examination shows abnormality, and measures instituted to combat the threatened toxaemia.

*Psychology:* All of this care and advice is useless without tact. The patient is inclined to get the idea that something unusual is about to happen, and begins to magnify her small ailments. This is especially true of primipara. They should have their attention called to the fact that there have been many women in the same state before, and that everything is to be done without the expectation of trouble but

with the purpose of forestalling the same. She should be especially protected from her "friends" who bring gloomy and superstitious "yarns" about maternal impressions, together with fancied and true accidents which have befallen other women under the same conditions.

*Physical Examination*: This should be done early in the case where the patient is new to her medical adviser, and in all patients where there is any likelihood of trouble. A complete pelvic examination should be made as soon as the foetus is viable. This is to ascertain the roominess of the pelvis, both bony and soft parts. Towards the last, if an X-ray is available, the position of the child, multiple pregnancies and many other points helpful to the attendant can be ascertained without the manual examination.

*Hospitalization:* This is advisable where there is any likelihood of operative help being necessary in the delivery. However, it will be a long time before all women can have these advantages.

*Supplies:* Every woman expecting to be confined should be given a printed list of the things likely to be needed.

In everything the patient should have entire confidence in her medical adviser, and he should be worthy of the same.

## A FEW REMARKS ABOUT ETHYLENE.*

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This paper deals only with a brief practical consideration of ethylene anaesthesia. Whoever now-a-days is beginning to be interested in ethylene is looking for a reassurance of safety and efficiency. Ethylene, or olefiant gas, is made by extracting a molecule of water from alcohol. Its formula is $C_2H_4$. It is a hydrocarbon gas, and an essential constituent of illuminating gas, has a pungent sweetish odor like wet matches or sorghum, is highly inflammable, and is quite comparable to ether in these respects.

The gas is compressed to a liquid in steel cylinders and is available for use in the same manner as nitrous oxide. Ethylene is administered in combination with oxygen by means of a gas machine. It can be used in conjunction with nitrous oxide, and to such a mixture ether can be added. A hypodermic of morphine and atropine is permissible, and often desirable. The signs of anaesthesia are much the same as when nitrous oxide and oxygen are given. The machine I use is the Seattle Model of the Gwathmey apparatus, which I think is the most economical in the amount of gas used and the simplest to handle of any type of machine made at the present time.

Experiments have shown that ethylene and oxygen, and to a minor degree, ethylene and nitrous oxide, are explosive in certain proportions and under pressure; therefore, a diaphragm reducing valve having a pressure chamber if used with ethylene should not be used with nitrous oxide, or vice versa. Any gas machine having two reducing valves, one for oxygen, one for nitrous oxide, can only be used either with ethylene-oxygen, or with nitrous oxide-oxygen, and alterations of the two would be risky. The Gwathmey apparatus having no diaphragm reducing valves, therefore no pressure chamber to involve risks, is in this respect safe.

Another very important factor of safety is that, with the Gwathmey apparatus the gases only combine after they bubble through the water of the sight feed, when they are at low atmospheric pressure, or a pressure of maximum 10 m.m. mercury, which is considered safe for the mixture. I get between five and seven anaesthesias out of a 250 gallon tank of ethylene. The oxygen used costs per anaesthesia about fifty cents, making a total cost between $1.75 and $2.25 per anaesthesia. The amount of ethylene necessary to maintain anaesthesia averages about eighty-five to ninety-five per cent ethylene, or two to four holes, and oxygen five to twenty per cent, or one to two holes.

Advantages accompanying ethylene anaesthesia are numerous. We get better relaxation without cyanosis, a greater quantity of oxygen can be given with ethylene than with nitrous oxide without disturbing anaesthesia, patients are not as prostrated nor as exhausted from ethylene as they are from the other general anaesthetic agents, and consciousness and strength are quickly recovered. The patient's skin remains dry although rebreathing usually causes sweating, which may be overcome by administration of atropine. Ethylene is a

*Read before the Southside Virginia Medical Society, at Richmond, Va., September 16, 1924.

relatively safe anaesthetic, although it may become dangerous in unskilled hands.

Disadvantages are few. The principal one is its inflammability, which is no greater than that of ether. The rebreathing method gives the maximum of safety, as a minimum amount of gas escapes into the room. The odor is considered disagreeable, but this can be overcome in different ways:

1. By adding an agreeable scent to the gas as it passes through the machine.

2. Beginning with a dilute mixture of ethylene and oxygen.

3. By using nitrous oxide and oxygen as an induction.

Headache, which frequently follows nitrous oxide-oxygen, is not uncommon after the use of ethylene, but is less troublesome and not as severe; nausea and vomiting following ethylene anaesthesia are not uncommon, but usually mild, and of short duration.

Cyanosis may develop, and should be avoided; respiratory irritation is uncommon, but there is a slight amount of it with prolonged rebreathing.

*Oozing.*—It has been claimed by some that you get more oozing from the administration of ethylene than with other general anaesthetics. This I have failed to see, as I have changed from ethylene to ether, and have noticed no marked change in this respect. Up to the present time I have given 500 administrations of ethylene. The patients' ages varied from 2 years to 76 years, with no fatalities.

In this series ethylene was used in different combinations, such as—

1. Local ethylene-oxygen.
2. Ethylene-nitrous-oxide-ether.
3. Ethylene-nitrous-oxide-oxygen.
4. Nitrous-oxide induction, followed by ethylene-oxygen.
5. Ethylene-oxygen and ether.

Ethylene is non-toxic, and in my experience with ethylene, there has been a slight rise in blood pressure from 10 to 20 m.m. during the administration of the anaesthetic. I realize this is contrary to the observations of others, but I have taken the pressure before, during and after the administration. It is particularly advantageous to use this form of anaesthesia in bad heart cases, acidosis, diabetes, nephritis, in fact, any case in which you are at a loss as to what anaesthetic to use. A preliminary hypodermic of morphine and atropine is very desirable, unless contra-indicated; atropine reduces sweating in maximum rebreathing, and the rebreathing method reduces the fire risk, as it allows only a minimum amount of gas to escape into the room. I also take the precaution to ground my machine by having an ordinary wire run from the machine to a pipe, and see that no electric machines are running and no cautery burning.

I suggest that you try not to make any one anaesthetic do the impossible. The anaesthetic should be varied until the proper mixture is obtained. The simple and safe rule is to keep the patient pink and asleep with a maximum amount of oxygen and a minimum amount of ether. My impression is that ethylene has come to stay, and has made for itself a permanent place among the general anaesthetics.

1101 *Floyd Avenue.*

## A CASE OF BILATERAL TUBAL PREGNANCY.

By H. E. JORDAN, Ph.D.,
and
I. A. BIGGER, M. D.,
University, Va.

Instances of simultaneous pregnancy of both tubes remain sufficiently rare to warrant report of any additional case. Scheiber (*Zentralblatt f. Gyn.*, Oct. 11, 1924), who claims to have reported the first case since that of Borell in 1921, states that only twenty-seven cases are on record. Schreiber found an embryo of approximately the third week in the left tube. The right tube had ruptured, and the embryo was not recovered. The abdominal end of the tube contained chorionic villi ("placentarzotten"). Since the right ovary lacked a macroscopically discernible corpus luteum, he infers that both eggs came from the left ovary. The left ovary contained a conspicuous corpus luteum. Schreiber concludes that his case of double tubal pregnancy is one of simultaneous fertilization of two eggs.

Our case is very similar to Schreiber's except that here the stage of development is clearly older. The right tube was dilated near the middle, attaining here a diameter of approximately 20 mm. The dilatation tapers gradually to within 10 mm. of the fimbriated end through a distance of 50 mm. On opening the area of greatest dilatation a well-preserved, apparently normal, embryo of 13 mm. length was disclosed, attached by a clear, delicate

umbilical cord of 8 mm. length to a compact mass of normal chorionic villi. The distal portion of the dilatation was filled with a conical thrombus 20 mm. in length, forming a complete cast of the tube.

The left tube had ruptured. A large, irregularly spheroidal blood clot, approximately 50 mm. in diameter, protruded from the area of rupture. After removal of the clot this tube had approximately the dimensions of its intact mate. No embryo was recovered from this tube. The embryo had probably suffered resorption, as had also the placenta, under pressure of the blood clot. A few persistent chorionic villi, though considerably disintegrated, have approximately the histology of those of the unruptured tube. It may be inferred, accordingly, that the pregnancies in both tubes are of approximately the same age, about seven weeks, and the result of a coincident fertilization. This estimation of age on the basis of length takes no account of a probable stunting due to relatively poor nutritive conditions in the tubes. Correcting for this factor, possibly as much as ten days should be added. Corpora lutea were not looked for at operation, hence we have no information as to whether the two eggs came from the same or both ovaries.

This patient was thirty-one years of age, and the mother of six children. She last menstruated on July 13, 1924, fifty-two days before the onset of the present trouble, and sixty days before operation. The menstrual history is in accord with the inference of equal age of the two pregnancies. Eight days before operation she developed severe pains in the lower abdomen, most marked on the left side. These lasted only a short time, but recurred five days later with greater intensity, and were accompanied by a bloody vaginal discharge. Several hours later she was admitted to the University of Virginia Hospital, and at operation the conditions described above were found. Nothing in the clinical history, nor the anatomical conditions observed at operation, furnish the slightest clue to account for the tubal implantations.

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A cheerful greeting dispels grief; it soothes pain; it spreads happiness.—*Selected.*

## THE LESSON TAUGHT BY OVER TWO HUNDRED THOUSAND INJECTIONS OF ARSENICALS.*

By T. LATANE DRISCOLL, M. D., Richmond, Va.
Associate in Syphilology, Medical College of Virginia.

The injections referred to in the title of this paper were arsphenamine, neo-arsphenamine, and sulpharsphenamine. The work was done at the Medical College of Virginia Dispensary, the United States Public Health Service, the Richmond Health Bureau, and in my private practice. The number to date is about two hundred and forty thousand, with the following observations and ultimate conclusions:

1. The further a molecule is evolved away from the original arsphenamine, the less efficient is this molecule in the therapeusis of syphilis, as manifest by paralleling a series of one hundred and fifty cases treated with neo-arsphenamine and arsphenamine, and finding that the arsphenamine, as determined by the effect on Wassermann and symptoms, was about 40 per cent more efficient, while sulpharsphenamine was about 20 per cent less efficient than neo-arsphenamine.

2. Careful preparation of "606," taking care to convert the salvarsan salt into the di-sodium salt, with proper dilution and rate of flow, makes this the least toxic of all the arsenicals, as demonstrated by the morbidity rate, arsphenamine being about one-half of one per cent, and neo-arsphenamine producing an endotoxemia in 10 per cent of the whole.

3. Judging arsphenamine as it has to do with clinical and serologic results, only a small amount of the molecule is available as a spirocheticidal agent, and it seems as definite results are obtained with the smaller doses as with the maximum, my reasoning being based upon the effect of comparisons in four decigram and one decigram doses on cutaneous lesions, together with paralleling six decigram doses and three decigram doses, as they have to do with a Wassermann reaction. There is but little if any difference in effect. It is obvious that if this is correct, patients are infinitely better off with small doses.

4. Relative immunity is established for the drug, or treponemata become t o l e r a n t to arsenic, and the anti-syphilitic drugs should be alternated after this apparent tolerance to obtain maximum results.†

5. The contra-indications for arsenic are

*Read before the Richmond Academy of Medicine.
†Reference: Driscoll, Va. Med. Mo., Dec., 1924, Page 556.

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greatly exaggerated as most of the so-called contra-indications are in reality syphilitic in origin.

6. The kidney and other tests, while fairly accurate, do not necessarily offer any clue as to the dangers incident upon the injection of arsenicals, as the kidneys may be functioning normally, and the patient may withal have dermatitis or endotoxemia.

7. Albuminuria, casts, and enormous amounts of pus often clear up after arsphenamine treatment, instead of being a positive contra-indication.

8. The blood stream takes care of an enormous amount of septic and foreign material without any apparent disagreeable symptoms resulting.

9. Arsphenamine allowed to set after alkalinization for fifteen to twenty minutes is less toxic than arsphenamine immediately injected, as it takes about this time for complete chemical change.

10. Sensitized patients, that is those with nitritoid or anaphylactoid reactions, are apparently desensitized with neo-arsphenamine, as, after the injection of the neo preparation, I am able to go back on salvarsan with impunity.

11. The dilution and rate of flow figure as the most conspicuous etiologic factors in the production of reactions after proper alkalinization.

12. There are few veins into which an operator may not gain entrance; therefore, no very good reason for the discomfort that accompanies intramuscular injections, or so-called spills because of this fact.

13. Patients with syphilis may be cured with arsphenamine alone, taking our methods now available for determining cure.

14. Arsenical dermatitis may occur irrespective of dose, some patients developing this condition with five centigram injection.

15. The kidney function test plays no part in certain cases, so far as indicating the probability of dermatitis. We should bear in mind idiosyncrasy, or probably a peculiar tendency of some patients to excrete arsenic by the skin route; also that this disease is probably due to the deposition of arsenic in the layers of the skin.

16. The promiscuous giving of "606" without the proper knowledge of syphilis or the drug is to be deplored.

17. Neo-arsphenamine is a potent drug, but the advertised simplicity and relative safety is misleading, and grave errors have resulted therefrom.

18. In my hands sulpharsphenamine is the least efficacious of the preparations under discussion, certainly so far as it has to do with obtaining a negative serology. Upon primary and secondary lesions, the effect is not to be complained of.

19. Under ordinary circumstances, giving rather large doses of mercury and bismuth at the same time with arsenical treatment, is more than the average kidney or liver can stand.

20. Jaundice is a condition brought about by therapy, and is not a syphilitic condition; it constitutes a positive contra-indication for further therapy at the time.

21. Reactions may be divided into three separate and distinct groups, each group representing a distinct group entity of symptoms, with different treatment for the varying manifestations.

The first and most common reaction is what seems to be a distinct allergic phenomenon, the sensitization being due to either killed treponemata or the drug, with the symptoms almost classically those of hypersensitization, and may develop after only a few drops of the drug have been administered, or a few minutes following the injection of the entire dose.

Symptoms come on rather suddenly, and are often most distressing. In the order of development, they vary but little: first, redness of the conjunctivae, suffusion of the face, and a few seconds later we may observe cyanosis. We may also note cough and dyspnoea, the latter assuming not infrequently the type of orthopnoea. Edema of the eyelids and lips, rapid and ofttimes thready pulse are also seen, these symptoms merging frequently into a picture of shock, with cold extremities, sweat, and collapse.

The second type of reaction is the clinical picture of a toxemia, and does not differ from a toxemia due to other causes. The following symptoms may occur from two to twelve hours after injection: Chill, with nausea and vomiting, diarrhoea, fever which seldom goes above 101 to 102 degrees Fahrenheit, pains in the epigastrium, sometimes throughout the entire abdomen, these lasting for a few hours or days.

The classic Herxheimer reaction in my experience is not common, although occasionally

it is encountered. It may explain some of the plegias and cases of coma following "606" by assuming that the focal erythema occurring around syphilides extends to lesions in the cord or brain, thereby producing pressure with the attendant symptoms.

Infrequently an attack of pulmonary congestion or edema is precipitated by the too rapid administration of the drug in cases of advanced lesions. This accident is due to the fact that the operator is unacquainted with the physical findings in his patient.

There is, however, a most distressing symptom arising at times, coming on with nothing else that I have been able to determine except the one thing, a terrific pain in the lower back. This has been explained by one author as the action of toxins on the splanchnic area.

22. Dermatitis develops about once in twenty-five thousand injections, regardless of the care used in ascertaining possible conditions which might predispose to this, and with the utmost care in administering the drug.

23. One patient in a hundred complains of some reactive symptoms, but when the morbidity mounts to 4 per cent, there is some defect in water, alkali, or injection technique.

24. The persistence of a positive Wassermann is indicative of a further syphilitic process, but in the aged or infirm, the wiser course is to tolerate this rather than to take chances in our enthusiasm with too much therapy.

25. The treatment of neuro-syphilis, in the light of our present knowledge and the methods used, is not to be depended upon. A positive cerebrospinal fluid does not of itself indicate general neuro-involvement, but simply potential neuro-involvement, as does all syphilis.

26. The final summing up of my experience indicates that we are far from having a specific in the treatment of syphilis; but it appears some cases are cured by using, consistently and conservatively, the known drugs after long and patient treatment and careful observation over a period of years.

In concluding, I would say too much faith is being placed in a single drug.

*Medical Arts Building.*

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CHEW IT OVER.

To those who talk and talk and talk
This adage will appeal:
The steam that blows the whistle
Will never turn a wheel.—*Selected.*

# Correspondence

## Notes on Florida.*

To the Editor:

A sketch of some of the things observed during a winter's stay in this state may interest some readers of the Virginia Medical Monthly, though our experience has been limited to only a few localities. Brought here by a case of asthma in the family, we are on a sandy key, Long Key, off the west coast, and in the Gulf of Mexico, some dozen miles from St. Petersburg. The island is of pure white sand, formed entirely of finely broken shell; it is several miles in length, and only a few hundred feet wide. A bridge one mile long connects with the mainland, and a village of perhaps a thousand people is located near one end of the key. It is a resort to some extent renowned for climatic cure of asthma, as well as beneficial to rheumatism and other like ailments, and particularly adapted to under-developed children. As in St. Petersburg, known as the "Sunshine City," records show that for the past fifteen years there have been an average of only five-and-a-half days per year when the sun did not shine a part at least of the day. A wide, clean, white sand beach stretches almost the entire length of the island, with surf of the open gulf breaking on it constantly. The shallow water extends several hundred yards from shore, and there is no undertow, so it is safe for children, as well as a beautiful playground of which they never tire.

The water is very hard, it is heavily charged with sulphuretted hydrogen gas, which escapes when the water is allowed to stand. One or more flowing wells of this water, exist on the island, as also of other water more palatable for beverage purpose. For household use many use cistern water (rain water), and distilled water is obtainable for drinking. A bus line, and a boat line connecting with trolley cars at the mainland, furnish means of communication. The town has electric lights, and sewerage, also fire-engine, but no gas as yet. It is a popular place for St. Petersburg people to visit, especially for Sunday afternoon auto drive, usually about fifteen hundred or more cars crossing the bridge in each direction every Sunday.

*When we found that Dr. E. P. Tompkins, Roanoke, Va., was spending the winter in Florida, we asked him to let us have some communication from him when he had time to write. These "Notes on Florida" have proved so interesting to us, that we are publishing them in full.

St. Petersburg is probably the tourist town, *par excellence*, of the state. It is said to have a summer population of thirty odd thousand, and a winter population of *a hundred* and thirty odd thousand. The distinctive feature of the town is the "Green Benches." Thousands of these benches, seating about four or five people each, are placed back to back on the wide sidewalks; and all day and far into the night are filled with tourists, basking in the sun or enjoying the balmy air of evening. It is noticeable that many elderly people, and some very old people, are included in the number; and a fairly large percentage of those of more youthful appearance are evidently not strong, some have deformities, some are cripples from accident,—not a few rolling chairs may be seen, and some of the churches have "ramps" built beside the steps for the benefit of the roller chair folk. Incidentally, one must reach the church of his preferred denomination at least half an hour before service time in order to be sure of a seat.

As may be expected this multitude of people with time on their hands furnishes a great opportunity for the advertising cure-all people, and they are not slow to seize the chance. Handbills are distributed inviting all to this or that hall (it is said no lectures or harangues are permitted on the streets or in the parks), to hear "Doctor" So-and-so tell how to get well, or "Professor" Ketchem unfold his marvels of science (sic), and incidentally to learn that the Doctor has consented to reduce his consultation fee from fifty dollars to thirty dollars for this occasion only. It may be said that the "doctor's" lack of knowledge of elementary physiology is more than made up for by his self-assurance.

On a certain recent occasion, a young man was advertised to drive a car blind-folded through city traffic. The newspaper stated that "Dr. W—— of the doctors of chiropractic pronounced him fit, except for a slight subluxation of the second vertebra of the spine," and Dr. W—— would "follow in the press car to give adjustment at terminus in case it is necessary." Likewise a display ad informs the suffering public that "Bone-Setter A—— adjusts ligaments, tendons, prolapsed stomachs, constipation, colitis, gall, bladder, all nervous muscular trouble." (Punctuation as in the paper). Dr. C——, not to be outdone states that, "Owing to the delicious fresh foods, his treatment here is very successful," slightly ambiguous as to where the success lies, but answers the purpose.

The Florida Funeral Home announces briefly and rather cryptically: "Morticians—Demi-Surgery. Private Limousine Ambulance." Most of the medical profession know what surgery means, only a few know *demi*-surgery. Which are you?

To the credit of the medical profession of the state it should be known that the Board of Examiners—which requires that every member of the regular profession entering the state to practice shall pass its examination, and reciprocates with no other examining board—is making efforts to curb the illegal gentry, and recently made several arrests of alleged law violators, one of whom admitted he charged twelve hundred and fifty dollars for some three weeks of "treatment," consisting in part, (may be entirely) in restricting the patient to *raw foods*. In addition to this, at certain intervals appears in the daily papers this notice: "The following St. Petersburg physicians are members of the Pinellas County Medical Society and the Florida State Medical Association and are eligible for membership in the Southern Medical Association and the American Medical Association." Then is given a list of some two score names in alphabetical order. The sojourner who is interested in matters of health is thereby informed as to qualified men.

A local member of the examining board, in a newspaper interview, last week, said, "The fight will go on. We hope it will be brought to an end next year, but it will not be brought to an end until Florida is thoroughly cleaned of medical practitioners who are engaged in work illegally without license and who are not qualified educationally to carry on the work. We are hoping that only duly registered and qualified physicians will be left in Florida after the campaign."

St. Petersburg is to be the place of meeting for the 1925 session of the Florida State Medical Association. This will take place in May, and it is expected that a large number, some five or six hundred members and guests, will be in attendance.

Up further in the peninsula, at Safety Harbor, has recently been opened a Sanitarium for the treatment of rheumatic affections. It is up-to-the minute in all its appointments, and is said to have cost, together with pavilion and bath houses, over a million dollars. It is fi-

nanced by St. Petersburg and Tampa men, a number of physicians and specialists from the latter city being on the staff. It is in charge of and under the direction of Dr. Edwards, a former Georgia physician, well-known, thoroughly qualified, and a most genial and courteous gentleman. It is here that is located the Espiritu Santa Springs, highly esteemed for many years in the treatment of rheumatism and neuritis. These springs are five in number, varying in their chemical composition, most of them highly charged with mineral substances, but one of them almost approaching distilled water in its purity, or absence of mineral constituents, it is said. These springs, together with the equable climate for which this whole section of the state is noted, will assure a patronage constantly up to full capacity. So far, the accommodations are complete for only sixty-five patients, and the full quota was already engaged long before the buildings were completed. In addition to the sanitarium, however, the same company is to build immediately a hotel of three hundred and twelve rooms, and this is to be rushed to completion.

Stories are told of the very remarkable cures wrought by the water and the climate here. Residents speak of case after case coming on stretchers, or in wheeled chairs or on crutches, which in a brief time are discarded, and the patient able to walk without help. It is said that formerly a pile of crutches lay near the springs, thrown away by one-time users, mute but eloquent tribute to the efficacy of the waters. Some wag, thinking to make the picture more nearly complete, on one occasion added a couple of wooden legs! The management, fearing this was claiming rather too much, had them speedily removed as soon as discovered.

Up at Howey-in-the-Hills is a community rapidly building up which seems to be especially popular with the medical fraternity. Some forty-odd doctors are interested here, either as residents for part or all the year, many owning homes, and others sojourning at the very comfortable and well appointed hotel. In the promoting company are a number of physicians, and the intention is to make this a very high-class and select community, where homes may be made, and a cultured and congenial community established. However, it is not restricted to physicans by any means; lawyers and other professional and business men are likewise interested. This is on the border of Lake Harris, and in time this will be the head of transportation through a chain of fresh water lakes and out through the St. John River. Eighty thousand acres of land are owned by the promoting company, on which there are some fourteen hundred lakes, large and small, all of which are well stocked with fish, and angling is the order of the day the year 'round. This is highland for Florida, three hundred and sixty feet, it is said. The presence of the immense bodies of water surrounding it makes for very equable climate, and it is in this region that the citrus fruits thrive best. Thousands of acres of orange and grapefruit groves are in this vicinity, and not far away are the centers also of the celery, lettuce, and pepper industries, twenty and thirty acre fields of each being not uncommon.

While it is not indexed in medical books, as such, no description of Florida would be complete without some mention of real estate "fever." It is epidemic, endemic, and pandemic, all over the state. It is in the air, and in the water, and in the food. One never speaks for ten minutes on the street with a casual acquaintance that he is not admonished where he can get the very best bargain in "lots" or, as many prefer now, "estates," or where a fine piece of acreage can be had 'way under the market; the elevator boy in the hotel will sell you property, likewise the barber who trims your hair. "Developments" and "sub-divisions" float around in the air, all the talk one hears in hotel lobbies, in the parks, on the "Green Benches" is of real estate. Fortunes are made, prices continue to mount, one wonders where the end will be. The migration of humankind into Florida is one of the most remarkable movements of the century so far. Broad smooth highways are built through the wilderness, for miles on miles as one passes over them by auto not a living creature other than human beings in motor cars going in the opposite direction may be seen. Some day this wilderness will be cleared out, fields and homes established, and the land made fruitful. The railroads just now are taxed to carry the northbound tide of humanity, not to mention the thousands upon thousands of motor cars with full loads on the brick-paved roads. Every year more and more are coming to stay, those who are best in posi-

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tion to know say that it is "only seven o'clock in the morning as yet in Florida."

E. Pendleton Tompkins, M. D.

*Pass-a-Grille, Florida.*

*April* 2, 1925.

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**The Goiter.**

To the Editor:

Goiter is an old subject but one that now needs increased attention. Basing my remarks on evidence in the September number of *American Medicine*, it is time for our medical societies to urge State Health Departments to take immediate and active interest in the study and prevention of this menace through the aid of public enlightenment and of individual physicians in general practice. It is futile to wait until the physical and mental and moral condition of the children of the present generation is beyond control.

The sound functional development and activity of the thyroid gland is necessary for the best physical and mental development of the children. But it cannot be of maximum service without the sanction and approval of those who have the care of the children; and then not to the fullest extent of efficiency until it is backed by the supportive value of those who are able and willing to undertake the public spirit necessary to create appropriations equal to the cost of the medication to assure the benefit recognized by experience elsewhere; especially is this the case in Switzerland, where it has done acknowledged good. Medical literature tells us of the prophylactic encouragement in Switzerland, which country we might well call the "home of goiter." "Among the school children of the Canton of St. Galen there were 87.6 per cent in 1919 who had goiter, while only 13.1 per cent were found thus affected in 1922. On account of this remarkable achievement, the Goiter Commission of Switzerland, in 1923, recommended the use of iodine as a preventive measure throughout the entire state as a public health measure.

The City of Rochester, N. Y., has adopted the plan. For a period of two weeks during the spring and autumn sufficient sodium iodide is added to the daily water supply to constitute an iodine content of 1.75 of a grain to the gallon. This would give in two quarts of water taken each day seven-eights of a grain of iodine, which Swiss experience has demonstrated to be effective.

The Health Departmnt of Grand Rapids regards goiter prevention as a necessary public health measure, to be attacked through the existent organization of school physicians and nurses. It is further stated: "The fact that 75 per cent of simple goiter occurs among school children indicates the rationality of undertaking the correction of goiter during the period when children are more readily reached and controlled and when the educational value of the measure as related to health can be adequately presented to children and their parents.

This procedure seems to be the most rational and effective plan of attack that can be put in operation. It is simple and easy to control and, once in general use, it will very soon become a fixed part of our educational scheme. Education without health can never reach maximum results. The generations to follow must be cared for now in the making—it is too late after the damage is done. Prevention is what they need.

We are told that in a survey of the school children in Grand Rapids, 30 per cent were found to have enlargement of the thyroid gland; 33 per cent of the number were boys and 67 per cent were girls. The thyroid enlargements increased gradually from the age of five to fifteen years and, consequently, are most frequent at the adolescent period.

In 1916, Akron, Ohio, started the good work in this country. The idea is being put in operation throughout the world. Why not begin now in Virginia? No newspaper published in this State should let health boards rest until this goiter-prevention is put into constant use in our schools. Why have our girls and boys sick when it can be so easily and cheaply avoided?

Stephen Harrnsberger, M. D.

*Warrenton, Va.*

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A little girl timidly asked the drug clerk for a package of pink dye.

"What do you want it for?" responded the clerk. "Woolen or cotton goods?"

"Neither," said the child. "It's for ma's stomach. The doctor said she's to diet, and she wants it a pretty color."—*Exchange.*

# The Truth About Medicine

In addition to the articles enumerated in our letter of February 28, 1925, the following have been accepted:

Abbott Laboratories
Butesin Picrate Dusting Powder.
Eli Lilly and Co.
Iletin (Insulin—Lilly)—U-80, 10 c.c.
H. K. Mulford Co.
Rabies Vaccine (Phenol Killed)—Mulford.
Parke, Davis and Co.
Desiccated Para Thyroid Gland—P. D. and Co.
Cauliflower Protein Extract Diagnostic—P. D. and Co.
Lentil Protein Extract Diagnostic—P. D. and Co.
Friedlander Bacillus Protein Extract Diagnostic—P. D. and Co.
Micrococcus Tetragenus Protein Extract Diagnostic—P. D. and Co.
Streptococcus Hemolytic Protein Extract Diagnostic—P. D. and Co.
Streptococcus Non-Hemolytic Protein Extract Diagnostic—P. D. and Co.
Paratyphoid, A Protein Extract Diagnostic—P. D. and Co.
Paratyphoid B, Protein Extract Diagnostic—P. D. and Co.
Pine Pollen Protein Extract Diagnostic—P. D. and Co.
Apricot Protein Extract Diagnostic—P. D. and Co.,
Yellow Daisy Pollen Protein Diagnostic—P. D. and Co.
Ox-Eye Daisy Pollen Protein Diagnostic—P. D. and Co.
Oak Pollen Protein Extracts Diagnostic—P. D. and Co.
E. R. Squibb and Sons.
Insulin—Squibb, 40 Units, 5 c.c.
Bean (Kidney) Allergens—Squibb, Cauliflower.
Allergens—Squibb, Frog's Legs Allergens—Squibb.
Daisy Pollen Allergens—Squibb, Bacillus Acne Allergens—Squibb, Bacillus Friedlander Allergens—Squibb.
Swan-Myers Co.
Timothy Pollen Extract—Swan-Myers.

## NEW AND NON-OFFICIAL REMEDIES.

Tuberculin Intracutaneous (Human Type). A preparation of tuberculin—Koch (New and Non-official Remedies, 1924, p. 309), marketed in single packages of one intradermal syringe containing 0.00005 c.c. of tuberculin old "O. T."; in packages of five intradermal syringes each containing 0.00005 c.c. of tuberculin old "O. T." and in single vial packages containing tuberculin old "O. T." sufficient for fifty tests. H. K. Mulford Co., Philadelphia.

Squibb's Liquid Petrolatum with Agar.—A mixture composed of liquid petrolatum—Squibb—heavy (California) 50 c.c.; agar 1.5 Gm.; sodium benzoate, 0.1 Gm.; acacia, glycerine and water sufficient to make 100 c.c. Squibb's liquid petrolatum with agar has the action of liquid petrolatum. It is claimed that the agar by adding bland bulk to the bowel contents, stimulates peristalsis in a normal way and that the combination of liquid petrolatum with agar mixes readily with the feces and softens them. E. R. Squibb and Sons, New York.

Mercurosal Ampules 0.1 Gm.—Each ampule contains mercurosal (New and Non-official Remedies, 1924, p. 207), 0.1 Gm. in 5 c.c. of distilled water containing 0.1 per cent of sodium citrate. Parke, Davis and Co., Detroit. (Jour. A. M. A., March 7, 1925, p. 751).

Tryparsamide—Sodium N-phenylglycinamide-p-arsonate. Thyparsamide contains 24.6 per cent of arsenic in organic combination. Tryparsamide is primarily a trypanocidal agent and is proposed for use in the treatment of certain forms of trypanosomiasis. Tryparsamide has some spirocheticidal activity and has an unusual power of therapeutic penetration, especially in the case of the central nervous system. This has led to its trial in certain cases of cerebrospinal syphilis. The value of the drug in these conditions, as compared with other methods of treatment, has not been conclusively determined. Tabetic affections have responded less satisfactorily, and patients with general paresis with advanced physical and mental deterioration have shown little or no improvement and the drug may hasten the progress of the disease in such cases. Its use is considered to be contraindicated in forms of syphilis other than that of the central nervous system. The worst of the properties of the drug is a tendency to produce amblyopia. Before using the drug, consideration should be given to the frequent production of visual injury. Tryparsamide may be administered subcutaneously, intramuscularly or intravenously. Powers-Weightman-Rosengarten Co., Philadelphia. (Jour. A. M. A., March 14, 1925, p. 815).

Insulin—Squibb, 40 Units—5 c.c. vials containing 40 units of insulin—Squibb. (The Journal, A. M. A., November 8, 1924, p. 1509), in each c.c. E. R. Squibb and Sons, N. Y.

Rabies Vaccine (Phenol Killed)—Mulford.—The virus is prepared according to the general method of David Semple. It consists of a sterile suspension of the brain tissue of rabbits moribund from the injection of virulent fixed strain of rabies. The virus is killed by the use of phenol and by incubation at 37.5 c. for twenty-four hours. Marketed in packages of fourteen doses, each dose contained in a syringe. All the doses are of the same potency. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., March 21, 1925, p. 893).

## PROPAGANDA FOR REFORM.

Scarlet Fever Antitoxin and Scarlet Fever Serums.—The scarlet fever serum of Dochez and Blake is prepared by injecting a horse with culture medium and into this inoculating living streptococci which cause abscesses producing toxin against which the horse develops antibodies. The serum derived from the horse is an antistreptococcus serum.

The scarlet fever antitoxin prepared by the Dicks is secured by injecting a horse with a toxin prepared from the filtrate of cultures of specific streptococci isolated from cases of scarlet fever. With this toxin, the Dicks report, they have been able to produce symptoms in human beings that closely resemble the symptoms of scarlet fever. The toxin therefore is injected into a horse. The serum obtained from the horse is a scarlet fever antitoxin just as diphtheria antitoxin serum is prepared by inoculating a horse with the toxin of diphtheria bacilli elaborated by the diphtheria bacillus. The latter statement is true, of course, only to the extent that the Dick toxin is actually the specific scarlet fever toxin. The matter is complicated still further by the fact that the Dick antitoxin is concentrated, and it is claimed less likely to produce serum reactions than the unconcentrated Dochez serum. (Jour. A. M. A., March 14, 1925, p. 819).

Tricalcine Not Accepted for N. N. R.—The Laboratoire des "Produits Scientia," Paris, France, markets

"Tricalcine" in the form of powder, cachets, compressed tablets, chocolate tablets, and also cachets of "Tricalcine adrenalinee," stated to contain 3 drops of a 1 to 1,000 solution of epinephrin per cachet, cachets of "Tricalcine Methylarsinee," stated to contain 0.01 gm. of sodium cacodylate per cachet, and cachets of "Tricalcine Fluoree," stated to contain 0.02 gm. of calcium fluorid. From the indefinite statements which appear in the advertising, it is evident that Tricalcine is claimed to be a mixture containing calcium phosphate and calcium carbonate as its essential ingredients, but that its exact composition is not declared. The advertising for Tricalcine has for its basis the abandoned lime starvation theory. The recommendations for the use of Tricalcine are without a satisfactory experimental basis. The Council on Pharmacy and Chemistry reports that Tricalcine and its preparations are unacceptable for New and Non-official Remedies because (1) indefinite, conflicting and unacceptable statements are made in regard to the composition of Tricalcine; (2) the product is marketed in a way to invite its promiscuous use by the public; (3) the extensive recommendations for its use are unwarranted, and (4) the combination of Tricalcine with, respectively: epinephrin, sodium cacodylate and calcium fluorid is unscientific. (Jour. A. M. A., March 14, 1925, p. 836).

Agrilin Not Accepted for N. N. R.—Agrilin is the uninformative name under which Lehn and Fink, Inc., New York, market a mixture of liquid petrolatum and agar. The preparation is stated to contain 38.6 per cent. of liquid petrolatum, and 2.25 per cent. of agar. Agrilin is offered to the medical profession and also through the trade package and newspaper advertisements, to the public. The Council on Pharmacy and Chemistry found Agrilin unacceptable for New and Non-official Remedies because (1) the name is not descriptive of its composition; (2) it is marketed with claims that are unwarranted and misleading and (3) it is advertised directly and indirectly to the public and thus furthers the ill-advised use of laxatives. (Jour. A. M. A., March 14, 1925, p. 837).

Loeser's Intravenous Solution of Calcium Chlorid Not Accepted for N. N. R.—In the advertising of the New York Intravenous Laboratory, Loeser's Intravenous Solution of Calcium Chlorid is proposed for use especially in intestinal tuberculosis and tetany. In neither condition are the indications so urgent that the intravenous method is the only or the best method of introducing calcium. The oral administration is generally to be preferred. But the manufacturers make the astounding statement that "Neither calcium nor guaiacol is adapted to oral administrations." The Council on Pharmacy and Chemistry found Loeser's Intravenous Solution of Calcium Chlorid inadmissible to New and Non-official Remedies because the advertising implies that the intravenous method is generally the method of choice for the administration of calcium and that calcium is not adapted to oral administration; these claims were held misleading and unwarranted. (Jour. A. M. A., March 21, 1925, p. 914.)

Sagrotan Omitted from N. N. R. and Mitysol Not Accepted.—Under the proprietary non-descriptive name "Sagrotan," the Council on Pharmacy and Chemistry recognized a mixture containing chlorcresol and chlorxylenol in a soap solution marketed by Lehn and Fink, Inc. This action was taken because the rules of the Council provide that a proprietary name may be recognized for a product when such a name is applied to it by the discoverer and because Lehn and Fink, Inc., claimed that they had secured the trademark rights to the name from Schuelke and Mayr, Hamburg, Germany. Subsequently, Lehn and Fink, Inc., informed the Council that the word Sagrotan "had fallen into the hands of the alien property custodian" and that for this reason the product was to be marketed as "Mitysol." The Council rescinded its acceptance of "Sagrotan" because the product is no longer marketed. The Council refused recognition to the product now marketed as Mitysol for the reason that Lehn and Fink is not its originator. (Jour. A. M. A., March 21, 1925, p. 914).

Typhoid Vaccine—The typhoid vaccine now in general use, is usually made from a type of organism of low virulence, properly sterilized by heat and containing preservatives, and is administered in doses of three injections, seven days apart. Immunity apparently appears about the end of the first week after the first or second injection. The blood serum of the vaccinated person has then acquired immunizing properties. These properties increase and may reach their maximum shortly after the third injection. It seems to be agreed that this immunity, once acquired, may last for several years; but there is no absolute certainty that a person immunized may not be subsequently infected during this period and typhoid fever produced. (Jour. A. M. A., March 21, 1925, p. 916).

# Book Announcements

**Report on Second International Congress of Military Medicine and Pharmacy,** in Rome, May-June, 1923. By COMMANDER WILLIAM SEAMAN BAINBRIDGE, M. C., U. S. Naval Reserve Forces, Member of Permanent Committee, Delegate from the United States. Reprinted from The Military Surgeon, December, 1924, January and February, 1925. Washington, D. C., 1925.

**The Author's Book.** On the Preparation of Manuscripts; On the Reading of Proofs; and On Dealing with Publishers. New York. The Macmillan Company. 1925. Paper. 73 pages.

**The Practical Medicine Series.** Comprising Eight Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of CHARLES L. MIX, M. D., VOLUME V. GYNECOLOGY, edited by THOMAS J. WATKINS, M. D., F. A. C. S., Professor of Gynecology, Northwestern University Medical School; OBSTETRICS, edited by JOSEPH B. DE LEE, M. D., Professor of Obstetrics, Northwestern University Medical School, with the Collaboration of J. P. GREENHILL, M. D., Adjunct Attending Obstetrician, Chicago Lying-In Hospital and Dispensary. SERIES 1924. Chicago. The Year Book Publishers, 304 South Dearborn Street, 12mo. 534 pages with illustrations. Price, $2.00. Price of series of eight volumes, $15.00.

**Recovery Record for Use in Tuberculosis.** By GERALD B. WEBB, M. D., Consulting Physician, Cragmor, Glockner, and Sunnyrest Sanatoria; President, Colorado School of Tuberculosis, Colorado Springs, Col., and CHARLES T. RYDER, M. D., of the Cragmor and Glockner Sanatoria. Second edition, revised. Paul B. Hoeber, Inc., New York. 1925. 80 pages and about 100 chart sheets. 12 mo. Cloth. Price, $2.00.

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# Editorial

## Diet.

Fundamentally, growth and nutrition of the body depend on protein, carbohydrate and fat in diet. The gross food is made up of these essentials and it is the physiologic duty or function of the alimentary tract, and its accessory organs, to convert the grosser forms into assimilable elements. The process of conversion of protein, carbohydrate and fat from the whole food into blood food is digestion.

The process of digestion, in the intestinal tract, converts these food factors into blood and lymph food and, as such, they are conveyed to muscle and other tissue of the body where final utilization of them is made. In this phase of the body-processes we meet metabolism. Protein is used for the replacement and construction of the protein-body. Carbohydrates and fats are used by cell structures in the production of body heat and energy. Crudely stated, and generally, the chief functions of food, as divided into these main considerations are then accomplished.

The balanced ration, containing sufficient calories to furnish each kilogram of body weigh with a caloric maintenance of, say, 35 calories daily so arranged that each kilogram of tissue may get ¾ to 1 gram of protein, 1 to 1½ grams of fat and 4 to 5 grams of carbohydrates, is taken as a fair expression of the dietary needs of an adult. So, if a body weighs, say 70 kilograms, 2,500 calories is a fair maintenance ration under little exercise. This may permit, roughly speaking, 280 grams of carbohydrates furnishing approximately 1,120 calories; 90 grams of protein, giving about 440 calories, 110 grams of fat, giving 990 calories, which totals about 2,500 calories. These figures are most general, but they represent a method of practical procedure and carry the point of our comment.

Now, although the ration or diet of the body is balanced; although calories adequate to maintain weight, to furnish energy and sustain normal body temperature are given, on this so-called balanced ration, the body will not grow and function normally; the body on this calculated diet will show evidence of serious maladies, it will die, unless other considerations are applied, because there are other important factors that enter into the maintenance of a growing or working body. If these factors are not incorporated in the diet, deficiency disease and death of the body ensue. These factors are biologic and the nature of them is still a matter of investigation. They have been given the name, "vitamins," so-called because of a supposed relation to amino-acids, although there is no evidence to show any relation to amino-acids or ammonia. Funk gave these accessory food substances the name of vitamins, and McCollum and Kennedy divided these substances into groups of fat soluble A, and water soluble B in order to differentiate the two types. These substances appear to be food complexes that are necessary for all living cells.

It is not possible in this editorial comment to recite the experimental history, but it is a chapter of vivid scientific interest, and worth re-reading. This discovery of an unknown group of food elements that, in addition to proteins, carbohydrates and fats, are necessary in animal diet was a distinct advance in our dietary knowledge.

Fat soluble A is needed in all diets and yet it is not abundantly distributed in natural food. The fat of milk and the yolk of egg contain it in greatest degree, while in such glandular organs as the liver and kidneys, and in such plants as lettuce, cabbage, spinach, celery, etc., it is found, but in seed-foods it is found in very small amounts. Fat soluble A is almost entirely wanting in bolted flour, cornmeal, polished rice, starch-food, glucose, cane sugar and milk sugar. It is not in vegetable oils. When this vitamin is entirely absent from the diet a growth-promoting fat is wanting and the body fails to attain growth; then there is

developed also destructive disease of the eyes, xerophthalmia.

With water soluble B, we are not so embarrassed because it is found abundantly in natural foods. It is in cereal grains and peas, beans, leaf vegetables as cabbage, lettuce, spinach, parsley, celery, etc., in animal tissue; in milk and in egg yolk, but it is not found in butter fat or vegetable fats. The foods which do not possess water soluble B are polished rice, starches, sugars and syrups, fats and oils. The absence of water soluble B produces beri beri or multiple neuritis, so common among people of the Orient who depend for food on polished rice and fish. Without the water soluble B, although fat soluble A is present, the animal fails to grow, quickly developing polyneuritis and paralysis. The disease is easily averted by the addition of adequate food containing water soluble B.

So, scurvy has been given the rating of a deficiency disease. It was formerly common among sailors who had subsisted on salt meat and sea-biscuits. It showed itself in production of changes in the fine capillaries, and by occurrences of hemorrhages from mucous membranes, by anemia and weakness. This disease entity is relieved by another undetermined vitamin-element, known as the anti-scorbutic substance which is found in fresh vegetables, limes, lemons and orange juice.

Besides there is yet another consideration in diet which should be borne in mind, because much physiologic function of fluids and growth depend upon it. The mineral content of food must be adequate. Food must contain sodium, potassium, calcium, magnesium, chlorine, iodine, sulphur, phosphorus and iron. From the water supply alone minerals cannot be adequately obtained or supplied; if the diet is made up of cereal-food (flour and corn) the diet is not rich enough in mineral. As much as 20 to 30 per cent of solid ration, says one author, should come from leafy plants. Meats and seeds are deficient in mineral matter.

The relation between diet and disease is, therefore, very close. If the absence of fat soluble A gives an animal such a miserable and dreadful disease of the eyes, and, if the absence of water soluble B gives the body such disabling diseases as beri beri and pellegra: and if the absence of the anti-scorbutic element, gives the symptoms of scurvy, it is reasonable to suppose that these symptoms, often unexplained, are exhibited in a body wanting in an adequate supply of these vital food substances. In other words, it is probable that much physical ill-being results from a diet too scant in vitamins. To say it another way, may it not be true that there are invisible deficiency-disease symptoms mixed with other symptomatology which physicians are not interpreting? If rickets, scurvy, pellagra are the late pathological changes of vitamin-starved bodies, well-being, fitness, efficiency, growth and longevity may all be below normal under a life-long vitamin-weak-diet. If this is true, and if important elements are to be found in the products of the cow, the hen and the vegetable garden, why should not a country-wide propaganda be begun to disseminate these fundamental and essential food-facts to the people? Bread, after all, is not the "staff of life." Bread, made of bolted flour, in spite of the fact that, with potatoes and rice and sweets together, it is the source of much of the blood sugar which furnishes a quickly usable fuel for combustion in the tissues, producing the body heat and energy, is only a very small part of the diet. It is important and ranks first in importance, but it is not the only thing.

Someone has suggested that the Southern States have a peculiar dietary problem. The problem is easy of solution, if proper agencies take up the problem of explaining its great simplicity and ease of solution in the South. There would be no pellagra problem in the South, if the man with the hoe would work the vegetable garden and eat of the great variety of its fruit; drink milk; eat eggs along with his bread, butter and molasses. So it is with disease. The fight against tuberculosis is therapeutically one of feeding with balanced ration the deficiency of a debilitated body. A high mineralized and fat diet of easily digestible food stuffs, balanced in relation to caloric need of malnutrition and underweight, will, with fresh air, sunshine and rest do much for the calcification of tubercular foci wherever located in the body. On this diet of milk, eggs and leafy vegetables with a blood enriched with a high sugar content by carbohydrates and a protein intake adequate to maintaining a nitrogen balance; and a high fat diet of such proportion as to favor additional body weight over normal by 10 to 20 per cent, we should have a reconstruction in the tuberculous body

which should arrest its progress in a large percentage of cases.

Likewise in diabetes, where the degeneration of the Island of Langerhans has diminished normal insulin manufacture, the dietary management of the crippled carbohydrate machinery approaches near to being a solved problem in internal medicine. Certainly the knowledge we possess of the carbohydrate values in food stuffs and the methods of discovering the carbohydrate tolerance in diabetes, also the proper requirements of protein and fat adjustment to the caloric needs of each kilogram of body weight, makes the handling of diet in disease a most important consideration on the part of the profession.

In closing, to bread and milk, we must add meat, yolk of eggs, vegetables and fruit. What is known by doctors of today as the 5 per cent, 10 per cent, and 15 per cent vegetables and fruits, milk, meat and eggs together with bread, makes a well rounded diet which should be easily digested if properly prepared, cooked, and eaten in proper amounts each day.

A. G. B.

**Making a Legislature.**

Now is the time to "make up" the personnel of the next legislature of Virginia. This "make up" can only be accomplished from the material that is available on election day. The doctors of Virginia can materially raise the standard of excellence of candidates for the coming election by attending to certain practical matters; by bringing into the field of candidates citizens of the highest type.

The physicians of the state should constitute themselves into committees for the selecting of candidates; and, then, make every possible effort to induce the selected citizens to submit themselves to the people for election. In other words, to give a concrete suggestion, the physicians of a county or community may well meet in caucus; discuss the ideal type of man or woman; look over the available ones; induce them to run; then support in every possible way their candidacy.

What sort of citizen should doctors want in the legislature? Character should be the first requirement. There should be no question of the sterling character of the proposed legislator. His honesty, his truth, his fealty to high purpose, his unswerving determination to do the right as he sees it, should be well known factors and qualifications of his daily life. Character should be a strong and proven quality in any man or woman who is to be asked to run for the Virginia legislature. With such a man one need entertain no trepidation that any proposition coming up in the matter of public welfare would fail to receive fair and honest consideration. So, the physician's caucus should think over the strongest citizen of highest character and endeavor to bring out such an one as a candidate.

Intelligence should next be considered. The power to think straight; the ability to see the best; the reason to separate fact from fiction; the type of mind that reasons from premise to conclusion with accuracy, and the gift of constructive imagination; the power to think in terms of statesmanship and public welfare; and the sense to champion the wiser way, are a few of the intellectual qualities the candidate should possess.

These high mental qualities are to be found in every community. Among the citizenry of Virginia there is intelligence of choice, intelligence of action, and intelligence of life. In these qualities the legislature of Virginia could be improved. Virginia needs the highest type of intelligence in the making of her laws. Virginia, while possessed of much that is great in the past, does not stand foremost today. Virginia, with what she possesses, in the quality of its people, the purity of its breed and lineage, in the opportunities offered in its material wealth, in its natural possessions and position, is backward: the state needs in its legislature a standard of intelligence of the higher order. The doctors of Virginia, in every county and community, are in a position to know and to choose as candidates for election persons of highest character and proven intelligence. Having selected such persons use every persuasion to make them run.

Let us have in the legislature men and women who have shown in their own personal affairs the power to succeed. Every community, every county has its successful citizens. This term applies to the successful farmer, the successful merchant, the successful preacher, the successful lawyer, the successful teacher, the successful doctor. Let us have legislative candidates who have shown enough of the qualities of grit, enterprise, intelligence and character to succeed in private undertakings. The legislature is no place for experiment. Men who make laws for a state should be wise men; men

who have made wise decisions in other fields, in their own lives, and have striven and succeeded in putting their decisions across. In every county of this state there are such men, and the doctors know who they are. They may be waiting to be asked to serve; needing only to be urged. If a group of doctor-citizens should call on them and ask them to run, no doubt, the "successful man" in legislature could be an accomplished fact.

With character, intelligence and proven qualities of industry and determination that make for success in life, the candidate should make an active and relentless study of the needs of our state and go on the hustings to seek election. The doctors may easily and quickly inform such legislators, when elected or before their candidacy, of the need of the enactment of laws supporting the regulation of medicine, proper health measures, need of the equalization of taxes, need of good roads and many other big things that are today crying for solution at our hands.

A. G. B.

**Proposing a Diet for the South.**

The growth, efficiency, longevity, temper and endurance of a people may rest upon its life-plan of diet; to say nothing of its resistance to diseases of bacterial origin and such diseases as pellagra, scurvy, rickets and intermediate conditions, which while yet unknown are quite probable.

It has been observed by McCollum that people of the tropics and the Orient, who employ leaves of plants to correct dietary deficiency offered in cereal diet, are small of stature, have a short span of life and are of less productivity than people who use liberal amounts of milk and dairy products as protective food. Europeans and North Americans, who are liberal users of milk, are found to be of larger size, longer life and more reproductive by comparison. If these broad observations are true, the problem of nation-feeding assumes the proportions of a nationally important question.

The deficiency of a considerable proportion of the poorer classes of the South, both among the blacks and the whites, makes it important to think in terms of food requirements in the light of available food stuffs in this section of the country.

Biological investigations conducted in recent years have produced some striking facts concerning food. Happily these facts render the solution of the problem more easy. The accessibility of these new found food requirements favor the Southern people. The use of milk will correct much in the diet of almost any person. A quart of milk a day, in addition to the chemical factors of carbohydrates, protein, fats and minerals, affords protection from deficiency of fat soluble A vitamins. The probability of milk in the diet of a people assuming the importance of a determining factor in the life span, in the stature and powers of reproduction, is one worthy of widespread utilization. Cow's milk and dairy products in general are certainly available in a country of such favorable climatic and agricultural conditions as are found in the South. Here corn, hay and the products of cotton seed are grown without much expenditure of labor, making dairying on a large or small scale an easy proposition. The knowledge and practice of milking under hygienic conditions, the building of clean barns, properly lighted and ventilated, of cleanliness in milking and in handling the milk, of cooling the milk to the proper temperature and many other considerations of like nature, add greatly to the wholesomeness of milk as a food.

The use of milk as a regular article of diet may render the problem of the digestion of cow's milk one needing consideration. Everyone cannot digest milk with equal ease. Many suffer considerable and evident gastric and intestinal distress after drinking milk. For this reason some patients and normal people dislike and will not use milk. The digestion of the milk is important, for without digestion it is not serviceable as a food to the degree contemplated in our advocating it as an item of diet for a nation or people. The cause of this set-back to the idea of milk drinking is largely due to poor stomach digestion. The stomach with abnormal acid-pepsin-rennin secretion, and its impairment of motor activity and power of evacuation, is really a poor digestive organ for raw cow's milk. Often the action of the gastric secretion masses the milk into a curd which renders it impossible of even partial digestion or prompt evacuation into the alkaline secretion of the liver, pancreas, and intestines where its several elements are broken up into usable forms. This produces costiveness, gas and toxic symptoms, which, naturally

give such persons a distaste for milk as a part of the diet. So, for the adult who needs milk as a part of his diet, it becomes much the same problem that we encounter in infant feeding. Modification of the raw milk is needed for the ailing stomach of the adult, as it is for the infant, in order to secure the full benefits without the ill-effects of milk feeding. The well known principle of modifying milk by the addition of carbohydrate bodies and by use of gelatin makes the needed handling of this digestive problem rather more easy of solution. After all, milk can be modified to agree with any digestion provided enough care is taken to fully investigate the stomach and its secretory and motor functions.

Eggs too are a staple item of food in the South. They are well known as possessing fat and protein, giving caloric value. The egg possesses in its yolk the protective vitamin of fat soluble A which, with milk, forms a protection to the bread, corn-meal, rice and potato diet of the South. The egg is a food product which is very easily within reach of every country home, no matter how poor and impecunious it may be. In the benign climate of the Southern states with chicken feed so easy of cultivation, and the little care which growing chickens demand, the availability of eggs in connection with the diet is quite obvious. Under modern methods of refrigeration, eggs may be stored for some length of time and still retain their freshness, making them lend themselves more readily to transportation and thus placing them within reach of everyone.

The quickness with which the stomach evacuates soft-boiled, coddled and raw eggs makes it a food product of remarkable usefulness because of high potentiality in food calories as well as its vitamin factor. Its 6 grams of fat and 6 grams of protein give it a caloric value of approximately 75 calories.

Next we may turn to another group of foods which are important, and at the same time especially available in the South. We refer to leafy plants, vegetables and fruits. These possess, in addition to the carbohydrate, protein, and mineral values, a biological factor of great use to the human body. These foods furnish water soluble B, another protective quality, possibly warding off known and unknown abnormalities. It is probable that lowered vitality, efficiency, growth and longevity are results of an inadequate diet, and serious, pathological changes result with a total, absence of these food factors for any length of time. In what country may one raise more easily than in the South such vegetables as: lettuce, cabbage, cucumbers, spinach, kale, turnips, asparagus, tomatoes, celery, snap-beans, cauliflower, egg-plant, okra, radishes, onions, carrots, beets, parnsips, butter-beans, dandelion, watercress, squash, green corn, shell-beans; or fruits as, cherries, grapefruit, lemons, oranges, bananas, strawberries, gooseberries, pineapple, pears, apricots, huckleberries, plums, currants, and also peanuts.

Many of the food products are available from the garden after a few month's cultivation. They may be native grown or are accessible in the neighborhood stores at small prices, if garden space is not possible.

The South has the climate and the natural soil in which these products attain greatest abundance in quality as well as quantity. There is then, little excuse for any Southern person with a small garden space available not to include in his diet, or the diet of growing children, the water soluble B and anti-scorbutic vitamins.

Meat is also a useful food and may be easily procured in the South. Chicken and fowls grown upon the small chicken yard and the lamb and beef cuts that the climate and grass conditions of the South can readily produce are available. Sea-food in the form of fish, oysters and crabs, particularly abundant along the South Atlantic coastal region, furnish the protein in useful form and should be utilized by a thrifty and sensible people without undue cost.

To these staple foods we may add flour, which, while not so desirable because of its bolted state, is manufactured and placed in stores the country over by the great flour manufacturers of the Middle West. Bread is still an important food. From this bread, the vitamin content of the grain has been sifted away. Corn-meal also furnishes a group of useful breads.

A. G. B.

XUM

# News Notes

**Rules for Making Program for Medical Society of Virginia.**

In accordance with resolution adopted at the Staunton meeting of the Medical Society of Virginia, the Program Committee of the Society met on November 10, 1924, to formulate plans for making the program for the annual meetings. This resolution was published in the December, 1924, issue of the journal.

It was decided to limit the number of papers to be read at the meeting so that it would not be necessary for the Society to meet in sections. Since this meeting, it has been decided by the Committee that a slight change should be made in the resolution, in order to give all members, wherever located, equal opportunities to have their titles among the first fifty titles to be received.

The resolution adopted by the Program Committee, as amended, should read:

"1. No title shall be accepted for the program prior to two months before date of the annual meeting. As provided in the By-Laws, an announcement concerning the annual meeting and request for titles of papers shall be mailed by the Secretary-Treasurer to all members of the Society.

"2. On and after the day which would be two months prior to the first day of the annual meeting, titles will be received until fifty are in hand. In the fifty titles referred to, provision shall be made for the papers of the invited guests and papers on the subject of general discussion.

"3. After the fifty titles are received, the Program Committee shall arrange and classify them according to related subjects."

ALEXANDER G. BROWN, JR., Chairman,
A. L. GRAY,
P. W. HOWLE,
E. L. KENDIG,
B. R. TUCKER,
Committee.

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This year, August the 13th (two months before first day of the Richmond meeting) will be the first day on which the Secretary-Treasurer of the Society may receive titles for the 1925 meeting.

It is therefore requested that members time the sending of their titles so that they may reach the Society's office, 104½ West Grace Street, Richmond, on the 13th of August, or as soon thereafter as possible.

**The Atlantic City Meeting of the American Medical Association.**

The dates for this meeting, May 25-29, are close at hand. No more delightful place could have been selected, to combine business and pleasure, than this "playground of the World," Atlantic City. Accommodations are ample and the excellent program which has been prepared, in addition to the attractions of the place, will draw a large gathering of physicians and their families. A one and one-half fare rate has been granted by the railroads, which fact will enable doctors to take their vacation at this time at a reduced cost. And, too, "King Automobile" will be much in evidence, as the roads leading to Atlantic City are good, and this means of transportation will offer the advantage of many side trips.

Several non-affiliated associations will take advantage of this time to hold their meetings, thus enabling their members to attend both meetings. Alumni of a number of colleges are planning "get-together" dinners and luncheons. Scientific and technical exhibits will provide much of interest.

Dr. William Allen Pusey, Chicago, is president, and Dr. William D. Haggard, Nashville, Tenn., president-elect. Dr. Clarence L. Andrews, 1801 Pacific Avenue, Atlantic City, N. J., is chairman of the local committee of arrangements.

Fellows of the A. M. A. should carry with them their 1925 Fellowship cards in that Association, and members of the State Socieites, not fellows of the A. M. A., should take cards from their State organizations and present these in registering. The Bureau of Registration will be located at the Boardwalk end of the Steel Pier, the entire length of which will be devoted exclusively to the meetings and exhibits of the American Medical Association.

Virginia will have two delegates this year in the House of Delegates: Dr. J. Allison Hodges, Richmond, and Dr. Southgate Leigh, Norfolk.

**The American Psychiatric Association**

Is holding its eighty-first annual meeting at Hotel Jefferson, Richmond, Va., May 12-15, under the presidency of Dr. William A. White, of Washington, D. C. Preceding the President's reception on Wednesday evening, the 13th, the annual address will be given by Clarence Darrow, Esq., of the Chicago Bar (nationally known from his connection with the Leopold-Loeb case). The address will be at the City Auditorium and will be open to the public. The title of Mr. Darrow's address will be "The Sane Treatment of Crime." The following day, the visitors will be taken on a trip to Williamsburg, Jamestown and York-

town. A picnic luncheon will be served on the grounds of the Eastern State Hospital at Williamsburg.

An unusually large attendance is expected at this meeting as it immediately follows the meeting of the National Association for the Study of Epilepsy, in Richmond, and the meeting of the National Association for the Care and Study of the Feebleminded in Raleigh, N. C., and most of the doctors at that meeting will also come to Richmond for this occasion. Dr. James K. Hall, Richmond, is chairman of the committee on arrangements, and Dr. George W. Brown, Williamsburg, is vice-chairman.

**The Southern Public Health Laboratory Association**

Held its fifth annual conference in Memphis, Tenn., April 9-11, Mr. Aubrey H. Straus, of the Virginia State Board Laboratories, presiding. The scientific and social features were much enjoyed by those in attendance. Feeling that the time has come when some check must be put upon indiscriminate laboratory work, and that the public and the medical profession must be protected from incompetent work by inadequately trained persons, the Association passed the following resolution. "Resolved that the Southern Public Health Laboratory Association approve the principle that all laboratories making public health examinations shall be approved by the State Board of Health."

The following officers were elected for the ensuing year: Chairman, L. C. Havens, Montgomery, Ala.; vice-chairman, T. W. Kemerer, Jackson, Miss.; secretary-treasurer, B. L. Arms, Jacksonville, Fla.

Following this meeting, Mr. Straus returned to Johns Hopkins University, Baltimore, where he is taking special studies in the School of Hygiene and Public Health. He will return to Richmond the first of June.

**Dr. Greer Baughman**

Has been elected a member of the board of directors of the Richmond Rotary Club, for the ensuing year.

**Dr. Douglas Vander Hoof,**

Richmond, was a recent visitor at the Princess Anne Country Club at Virginia Beach.

**Dr. John W. Winston**

Has returned to his home in Norfolk, after a visit to relatives in Bowling Green, Va.

**Dr. and Mrs. J. P. Trent,**

Farmville, Va., in April attended the marriage of the doctor's sister in Washington, D. C.

**Married.**

Dr. James Raymond Gorman, of Lynchburg, Va., and Miss Mary Woodville Ferguson, daughter of Dr. and Mrs. James H. Ferguson, of Clifton Station, Va., April 15.

Dr. Harry Barton Hinchman and Miss Regina Ladd Dickinson, both of Richmond, Va., April 22.

**The Medical Society of the State of North Carolina**

Held its annual meeting at Pinehurst, April 28-30, with one of the largest meetings in point of attendance in its history. Dr. Albert Anderson, Raleigh, presided. It was decided to hold the next meeting in Wilmington. Dr. W. de B. MacNider, Chapel Hill, was elected president, and Dr. L. B. McBrayer, Southern Pines, was re-elected secretary-treasurer.

Dr. Watson S. Rankin, who has been secretary of the State Board of Health of North Carolina for a number of years, tendered his resignation, effective June 1, to accept a position with the Duke Foundation at Durham, N. C. His successor will be named at a later date.

**The Alleghany-Bath County Medical Society,**

At its annual meeting in January, elected Dr. J. W. Wallace, Covington, president; Dr. Lanier D. Pole, Hot Springs, vice-president; Dr. R. P. Hawkins, Clifton Forge, secretary; and Dr W. M. Revercomb, Clifton Forge, treasurer. This is an active society which meets bi-monthly, the last meeting being at Hot Springs, May 8.

**Gorgas Memorial Institute.**

Interest in the Gorgas Memorial Institute of Tropical and Preventive Medicine continues unabated, and it is now announced that the American Dental Association has pledged its support to this most worthy project. This seems most appropriate in view of the close relationship which exists between the medical and dental professions.

Virginia doctors who are members of the Governing Committee are: Dr. Martin D. Delaney, Alexandria; Drs. Israel Brown, M. P. Doyle, Charles R. Grandy, Lomax Gwathmey, C. Lydon Harrell, Sarah Leigh Clinic, W. B. Martin, H. L. Myers, R. L. Payne, Frank P. Smart, and E C. S. Taliaferro, of Norfolk;

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Drs. Paul V. Anderson, Robert C. Bryan, William T. Graham, Stuart McGuire, Garnett Nelson, Charles R. Robins, Beverley R. Tucker, Douglas VanderHoof, and Robert H. Wright, of Richmond; and Dr. P. W. Boyd, Winchester.

**Dr. Carroll H. Fowlkes**

Has returned to his home in Richmond, after spending sometime on an ocean voyage. While he was away, Mrs. Fowlkes and their two children visited relatives in South Hill, Va.

**Dr. and Mrs. J. N. Elder**

Returned to their home in Hopewell, Va., recently, after spending about a month at Hot Springs, Ark.

**Dr. Austin I. Dodson,**

Richmond, Va., has been appointed captain in the medical corps, attached to the 246th coast artillery, Virginia National Guard, succeeding Captain E. T. Trice, Richmond, who was promoted.

**A New Hospital**

Will shortly be opened at Albemarle, N. C., at a completed cost of $100,000. Dr. Julius C. Hall, of that place, has been selected as president of the hospital, and Dr. Lucius V. Dunlap as secretary-treasurer.

**Dr. W. Nelson Mercer,**

Formerly of Richmond, who has been connected with the U. S. Veteran's Bureau at Saranac Lake, N. Y., since the first of the year, has been transferred to U. S. Veteran's Hospital No. 27, at Alexandria, Louisiana. His work is limited to tuberculosis.

**Dr. and Mrs. John Randolph,**

Arvonia, Va., were among those who attended the reception and exercises held at Monticello, April 13th, the anniversary of Jefferson's birthday.

**Child Management,**

The first publication of this kind issued by the Children's Bureau, Washington, D. C., gives the average parent, in simple and practical form, the results of modern research in the mental hygiene field. It was written by Dr. D. A. Thom, of Boston, an authority on mental hygiene, and in addition to giving much practical and sound advice, lists a number of "Don'ts" for parents, which should furnish food for thought.

**Dr. J. Minor Holloway,**

Of the Graduate School of Medicine, University of Pennsylvania, Philadelphia, spent the Easter holidays with his family in Port Royal, Virginia.

**Dr. and Mrs. B. F. Noland,**

Spencer, Va., were recently guests of friends in Richmond.

**Protecting Sight of School Children.**

In a recent study of the condition of eyes of more than 4,000,000 public school children, it was found that approximately 12 per cent of the school children of America have such seriously defective vision as to be handicapped in their work. In an effort to remedy conditions in the school room which may have a harmful effect on the eyes of children, the National Committee for the Prevention of Blindness, of New York City, has prepared a non-technical summary of the code of lighting school buildings, which it hopes to place in the hands of all school teachers in the country. This communication not only tells the teachers of the principles of correct lighting, but deals with other matters in the school room which have important bearings on the lighting condition within the room and on the use and abuse of children's eyes.

**Motor Tourists' Camp in New York City.**

Camp New York, a new camp for automobile tourists established well within the city limits of New York City, was officially opened May 2nd, with befitting civic ceremonies. It is but thirty minutes from Times Square by rapid transit with a station directly at the camp entrance. Its forty beautiful acres of high ground are situated at the junction of Boston Post road and Baychester Avenue, with ample room for a thousand cars, or a daily accommodation for five thousand people.

Developed by a group of experts, nationally known in motor touring circles, nothing in equipment has been overlooked in this camp to add to the comforts of the visitor. The camp overlooks Long Island Sound, and Pelham Bay is but a mile distant and famous for its salt water bathing, boating and fishing. Bronx Park with its renowned Zoological Gardens and Botanical Gardens is near by.

The establishment of Camp New York now enables the visiting motorist to economically visit New York, the Wonder City of the World, and with his entire family inspect its museums,

parks, libraries and historical places of interest. It assures him comfortable, safe and hygienic living conditions with police protection for his family and car at no extra cost, aside from the small daily camp fee.

**The West Virginia State Medical Association**

Is to hold its annual meeting in Bluefield, June 9, 10, 11 and 12, under the presidency of Dr. G. D. Jeffers, of Parkersburg. Mr. Sterrett O. Neale, Charleston, the newly appointed executive secretary, will gladly give information about this meeting to those requesting it.

**The U. S. Civil Service Commission,**

Washington, D. C., announces open competitive examination for associate milk specialist, receipt of applications to close June 2nd; also for dietitian, applications to be rated as received until June 30th. Detailed information about these may be received from above named Commission or the secretary of the board of U. S. civil service examiners at the post-office or customhouse in any city.

**Dr. William F. Drewry,**

Petersburg, Va., was recently notified of his election to membership in the National Committee for Mental Hygiene. This committee works with state societies and committees for the conservation of mental health, to help prevent nervous disorders and defects, and to raise the standards of care and treatment for those suffering from any of these disorders.

It is a pleasure to note that, in spite of his duties as City Manager of Petersburg, Dr. Drewry continues his interest in medical affairs.

**The Medical Women's National Association**

Will have its annual meeting in Atlantic City, May 25-26, with headquarters at Hotel Marlborough-Blenheim. Dr. Katherine C. Manion, Port Huron, Mich., is president, and Dr. Blanche M. Haines, Lansing, Mich, secretary.

**Venereal Disease Bulletin Published.**

A bulletin has recently been published by the Bureau of the Public Health Service, reporting the "Transactions of the Conference of Venereal Disease Control Officers of the State Health Departments and the U. S. Public Health Service," held at Hot Springs, Ark., last December. The greater part of this publication is made up of the report of a special committee appointed to make a study of the methods of diagnosis, treatment and policies in effect in the various venereal disease clinics throughout the country. This report contains considerable material which is of interest and assistance to the general practitioner as well as the specialist in urology or dermatology. Interested readers may secure this publication without cost by addressing a request to the U. S. Public Health Service, Washington, D. C., mentioning V. D. Bulletin No. 77.

**American Board of Otolaryngology.**

The next examination conducted by the American Board of Otolaryngology will be held at the Ambassador Hotel, Atlantic City, on Tuesday, May 29th, at 9 A. M.

Application blanks may be obtained from Dr. H. W. Loeb, Secretary, 1402 South Grand Boulevard, St. Louis, Missouri.

**Dr. Robert S. Kyle,**

Who graduated from Medical College of Virginia in 1923 and has been with Lewis-Gale Hospital, Roanoke, Va., since then, has located at Galax, Va.

**Doctors Delegates to State Democratic Committee.**

Drs. F. S. Hope, Portsmouth, E. L. Kendig, Victoria, and W. J. Strother, Culpeper, were among those who attended the State Democratic Committee in Richmond, April 21.

**Dr. S. Palmer Hileman,**

After acting as an assistant physician at Catawba Sanatorium, Va., has located at Goshen, Va., where he will continue to practice his profession.

**Dr. Robert F. Gillespie,**

Who has been located at Splashdam, Va., expects to locate at Wilder, Va., the first of June.

**Dr. Hundley Has Unusual Experience.**

Dr. and Mrs. M. E. Hundley, of Martinsville, Va., have returned home after a pleasant vacation spent at Hamilton, Bermuda.

The usual uneventful character of the voyage from New York to Bermuda was broken by the extreme illness of the purser. As he failed to respond to treatment, the ship's surgeon called Dr. Hundley in consultation and they both agreed that an immediate operation was necessary. The captain of the ship ordered necessary preparations to be made and had the ship stopped while Dr. Hundley and the ship's surgeon performed the operation. A couple of assistants and a trained nurse were secured from among the passengers and

all helped as they could. Upon arrival of the ship at Hamilton, the patient was transferred to a hospital and, at last accounts, was progressing satisfactorily.

**Dr. John M. Bishop,**

Who accepted an internship at Jefferson Hospital, Roanoke, Va., upon his graduation from Medical College of Virginia, last year, located at Inman, Va., the first of April.

**An American Health Congress.**

In order to give health workers from every part of the country a bird's-eye view of the public health movement in its broadest aspects, the National Health Council, at 370 Seventh Avenue, New York, has planned for an American Health Congress to be held at Atlantic City, N. J., during the week of May 17, 1926. Leading authorities on each phase of the public health movement will present the latest and most authoritative findings and programs for the solution of these problems. The Steel Pier has been engaged for headquarters and meetings will be held there and at nearby hotels on the boardwalk. Part of the space on the Steel Pier will be used for commercial and educational exhibits, which will be required to conform to the high standards of such a meeting.

**Dr. P. K. Graybill,**

After spending the winter in Phoenix, Arizona, expects to return to his home at Fincastle, Va., about the middle of this month.

**The Virginia State Board of Pharmacy,**

At its annual meeting in Richmond, the last of April, re-elected the following officers for the ensuing year: President, W. L. Lyle, of Bedford; vice-president, H. C. Littlejohn, of Leesburg; and secretary-treasurer, A. L. I. Winne, of Richmond.

Dr. W. C. Rosser, Rustburg, was granted a physician's permit to practice pharmacy.

**The Warren-Rappahannock-Page County Society**

Held its last regular meeting in Front Royal, Va., April 28, Dr. James G. Brown, of Woodville, presiding. Dr. J. R. Boldridge, of Hazel River, was at the secretary's desk. Several interesting papers were read by members and an address was given by Dr. W. J. Mallory, of Washington, D. C.

Dr. R. L. Page, Batesville, councilor for the Seventh Congressional District, of the Medical Society of Virginia, by invitation, gave a talk in which he stressed the importance of having all eligible doctors in every county join their county and State societies.

**Gift of $10,000 to Aid Research Work.**

It is announced that Dr. J. Shelton Horsley, Richmond, has made a gift of $10,000 to the University of Virginia, for the establishment of a prize based on research work for a thesis in surgery or in allied medical sciences having a relationship to the development of surgery. The prize is open for competition to graduates of the medical department of the University who have not been in the field of active work for more than thirty years.

**Dr. T. B. Ely,**

Formerly of Jonesville, Va., is now located in Roanoke, Va., with offices in MacBain Building.

**The American Proctologic Society**

Will hold its annual meeting at Atlantic City, N. J., May 25 and 26, at the time of the meeting of the American Medical Association. Dr. Frank C. Yeomans, of New York, is president, and Dr. J. F. Montague, of New York, secretary-treasurer.

**Medical College Commencements Near.**

Dates selected for the final exercises of Virginia's two medical schools are: May 31 to June 2 for the Medical College of Virginia; and June 13 to 15 for the Department of Medicine of the University of Virginia. Keep young by attending these annual reunions.

**Dr. M. L. Dalton,**

Roanoke, Va., has moved his office from MacBain Building to St. Charles Hospital, that city, where he will confine his work to internal medicine. Dr. Dalton has recently been taking post-graduate work in internal medicine at the New York Post-Graduate Medical School and Hospital.

**The American Society of Clinical Pathologists**

Will hold its annual meeting in Philadelphia, May 21-23, under the presidency of Dr. John A. Kolmer, of that city. The secretary is Dr. Ward Burdick of Denver, Colorado.

**Dr. Irving S. Barksdale,**

Son of Dr. George E. Barksdale and formerly of Richmond, Va., has been appointed health commissioner of Greenville, S. C., and entered upon his duties there on the first of May. Dr. Barksdale graduated from Yale University School of Medicine in 1923 and has

recently been connected with the department of physiology of the Medical College of the State of South Carolina, at Charleston.

**A Clinic for Crippled Children**

Was recently held in Covington, Va., under the auspices of the Alleghany-Bath County Medical Society. Dr. Bernard H. Kyle, orthopedic surgeon of Lynchburg, was in charge of the work.

**Dr. M. H. Eames,**

Lanexa, Va., was a recent visitor in this city.

**Dr. Frederick H. Baetjer,**

Baltimore, recently underwent an operation for the removal of an infected finger which had been burnt in X-ray work. Dr. Baetjer has now lost eight fingers and an eye as the result of these burns.

**A Health Magazine for Vacation.**

In planning for the summer vacation, much helpful information may be obtained from "*Hygeia*." It brings you the real truth about health and is a journal of individual and community health for the layman. *Hygeia* is published by the American Medical Association, in Chicago, and the price is only three dollars a year—less than what you pay for many popular magazines. Get a copy and judge of it for yourself.

**Dr. E. M. Wilkinson,**

Who graduated from Medical College of Virginia in 1923 and later served as intern at Stuart Circle Hospital, Richmond, is now located at Dan, West Virginia.

**Tetanus From Vaccination Dressings.**

The U. S. Public Health Service issues a warning to the medical profession and to the public against the use of bunion pads as a dressing in vaccination against smallpox. The use of these pads seems to be more common than would be supposed and several fatal cases of tetanus following their use have recently been reported in the United States. Laboratory tests have demonstrated the presence of tetanus spores in bunion pads from the same source as those which were associated with tetanus cases.

The Public Health Service deprecates the use of any kind of shield as a vaccination dressing, as the use of a shield tends to prevent evaporation, to retain heat, moisture, or discharges, with a consequent softening of the vesicle, to obstruct lymphatic drainage, to produce hyperemia, and to create conditions apparently favorable for the development of bacterial invasion, especially by the tetanus organism.

The smallest single site insertion compatible with a successful take and with no immediate dressing whatever is believed to be the best method of vaccination in the majority of cases.

**Opportunities for Graduate Medical Study in New York.**

The Committee on Medical Education of The New York Academy of Medicine has prepared a series of synopses of approved opportunities for graduate medical study in New York City which will soon be published for distribution. The synopses cover dermatology and syphilology, obstetrics and gynecology, internal medicine, neurology and psychiatry, ophthalmology, oto-laryngology, pediatrics, surgery, urology, and orthopedic surgery.

A Bureau of Clinical Information is maintained at the Academy of Medicine, 17 West 43rd Street, where detailed information is available regarding opportunities for graduate medical study in New York, and also in other cities of the United States and abroad. The Executive Secretary in charge of the Bureau is prepared to answer inquiries concerning ordinary internships, special internships or residences, graduate courses in medical schools and teaching hospitals, and extension courses. Much information in regard to graduate medical work in England and on the Continent is on file.

The Bureau publishes a Daily Bulletin of Surgical Clinics which will be mailed free to visiting doctors on request. A Weekly Bulletin of Medical Clinics also is published. A book of the fixed clinics of Greater New York, with a transportation guide, has been prepared for the use of visitors whose stay in the City is limited, and is furnished without charge.

**The American Congress on Internal Medicine,**

At its recent meeting in Washington, D. C., elected Dr. Charles G. Jennings, of Detroit, Mich., president. Dr. Frank Smithies, of Chicago, was re-elected secretary-general.

**The American College of Physicians,**

At their meeting, elected Dr. Alfred Stengel, Philadelphia, president, and Dr. Frank Smithies, Chicago, secretary-general.

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**Johnston-Willis Hospital to Have Nurses' Home.**

A nurses' home, at an estimated cost of $75,000, is to be erected adjacent to and for the use of Johnston-Willis Hospital, Richmond, Va., during the summer, and will be ready for occupancy in the early Fall. It is stated that the building will include the most modern equipment and that two of its three floors will be devoted to a school for teaching of nurses. There will be accommodations for sixty nurses.

**Dr. Alexander F. Robertson, Jr.,**

Of Staunton, Va., is spending sometime in Philadelphia and from there will go to New York City and Atlantic City. He will be home about the first of June.

**Dr. H. A. Dalton,**

Of Galax, Va., who has been under treatment in a Roanoke, Va., hospital, is much improved and expected to resume his practice about the middle of this month.

**Dr. and Mrs. J. Kennedy Corss**

Have returned to their home in Newport News, Va., after a visit to Hot Springs, Ark., and French Lick Springs, Ind.

**Dr. B. A. Middleton,**

Of Emmerton, Va., with a party of friends, recently enjoyed a motor trip through the Valley of Virginia.

**Fire at Medical College.**

Early in the morning of May 3rd, fire was discovered in the dispensary building of the Medical College of Virginia, Richmond. Prompt action on the part of the fire department averted what might have been a serious fire. Loss was roughly estimated at anywhere from $500 to $2,000.

**Whooping Cough Studies.**

Whooping cough causes a greater number of deaths in Denmark than any other infectious disease. Danish physicians and scientists therefore have devoted much time to the study of this disease. Dr. Thorwald Madsen of the Danish Serotherapeutic Institute, lecturing at Harvard, said that the institute has perfected a means of esablishing a diagnosis of the disease in its early stages. Its studies have also shown that after five or six weeks practically no whooping cough bacilli are found. As a result Danish children are now kept from school only four weeks after the beginning of the spasmodic cough. A whooping cough serum was found to have little preventive effect, but vaccination was found to lighten the infection and decrease the mortality to a considerable degree.

**Child Welfare Congress.**

An International Congress on child welfare will meet in Geneva, August 24-28, 1925, under the auspices of the Swiss Government.

**Dr. J. B. Dalton,**

Of Richmond, visited relatives and friends in Roanoke, Va., for a few days in April.

**Reunion and Dinner of the Medical Officers of the World War.**

An attractive feature of the annual meeting of the American Medical Association at Atlantic City will be the reunion of the medical men who served their country in the Army and Navy during the World War, to renew the memories, friendships and associations of those eventful days. The Chief Surgeon of the A. E. F. will be there, and the President of the Association of Military Surgeons, Surgeon General Hugh S. Cumming, and other officers of the Association under whose auspices the meeting will be held. An effort will be made to group together those who served in the same organizations and so it is requested that reservations be made as early as possibl,e and that comrades state in writing for them the base hospital or other medical unit to which they belonged. Write for tickets to Colonel Burt R. Shurly, Med-Res, U. S. A., 62 West Adams Avenue, Detroit, Michigan.

Time and Place: May 27th at 7 P. M. at the Ritz-Carlton Hotel, Atlantic Ctiy.

Members of the Association of Military Surgeons are requested to wear the badge of the Association.

**Provisional Birth and Death Rates.**

The Department of Commerce, Bureau of Census, announces that birth rates for 1924 were higher than for 1923 in sixteen of the twenty-five states from which figures are available. The highest birth rate for 1924 was 31.9 per 1,000 population, and the lowest 14.9.

Death rates for 1924 were lower than for 1923 in twenty-three of the twenty-nine states reporting. In fact, record low rates appear in thirteen states. Virginia is in this set. The highest 1924 death rate is 22.1 per 1,000 population, and the lowest 6.5.

Infant mortality rates for 1924 are generally lower than those for 1923, as only three of the

twenty-five states reporting show higher rates in 1924.

**Dr. and Mrs. L. O. Snead,**

Of Richmond, recently visited relatives in Halifax, Va.

**Dr. Max Thorek,**

Surgeon in Chief to the American Hospital of Chicago, has been made a member of the Surgical Society of Paris, France, and also a Corresponding Member of the Royal Academy of Medicine and Surgery of Torino, Italy.

**The Virginia State Dental Association**

Held its fifty-sixth annual meeting in Staunton, the last of April, under the presidency of Dr. A. Hume Sprinkel, of that place. Richmond was selected as the 1926 place of meeting, and the Association voted to invite the North Carolina State Dental Society to meet jointly with the Virginia Association. Dr. Harry Bear, for several years secretary of the Association, was elected its president; Dr. W. N. Hodgkin, of Warrenton, vice-president; and Dr. John Bell Williams, Richmond, secretary.

**Dr. and Mrs. William Morgan Smith,**

After spending the winter in Richmond, have returned to their home "Rosemont," Berryville, Va., for the summer months.

**Dr. and Mrs. Claiborne T. Jones**

And sons, of Petersburg, Va., spent the Easter holidays with friends in Orange, Va.

**Dr. W. C. Orr,**

Leesburg, Va., has been elected president of the Loudoun County Baseball League for the ensuing year.

**Doctors Among Rotary Officers.**

Dr. Charles E. Conrad has been elected president of the Rotary Club of Harrisonburg, Va., for the ensuing year, and Drs. James H. Deyerle and E. R. Miller new directors.

**Officers of St. Leo's Hospital.**

Dr. Parran Jarboe has been elected president and Dr. Ralph E. Dees vice-president of the staff of St. Leo's Hospital, Greensboro, N. C.

**Colds are the Baby's Enemy.**

Investigation of a group of 251 out-patient cases in the baby clinic at Mt. Sinai Hospital, New York, showed that colds and respiratory infections constituted the leading diseases. The basic causes of these ailments were frequently found to be too heavy clothing, lack of sunlight and fresh air, and other unhygienic conditions. Over ninety per cent of the infants showed evidence of rickets.

**Wanted**

To buy practice in Virginia or West Virginia. Would buy office equipment or property. Reasons for leaving present location, want to locate near high school. Graduate of Medical College of Virginia. References: West Virginia State Medical Association and County Medical Society. Nothing but a good proposition considered. Answers should be sent to No. 415, care this journal. (Adv.)

# Obituary

**Dr. James Fulton Williams,**

Of Charlottesville, Va., died at his home in that place May 1, after an illness extending over several months. He was born in Nelson County, Va., January 19, 1873, and studied medicine in Baltimore, graduating from the University of Maryland in 1899. He had been a member of the Medical Society of Virginia since 1902. He was also a Mason and an Elk. Dr. Williams was for sometime, and to the time of his death, surgeon of the Charlottesville Fire Department. He is survived by his wife and several children.

**Dr. John Diedrich Moritz,**

Of Charlottesville, Va., died at his home in that place April 24. He was born in Baltimore, Md., in 1875, and studied medicine at the University of Maryland, from which he graduated in 1904 and later studied in Philadelphia and Chicago. Owing to failing health, Dr. Moritz gave up practice in Baltimore and moved to Albemarle County, Va., near Cismont, in 1907. After living there about twelve years, he returned to Baltimore, but, after a short time there, went to Charlottesville and worked in connection with the orthopedic department of University Hospital. He was a member of the Medical Society of Virginia. His wife survives him.

**Dr. Carl Meach McCuiston,**

After an illness of several months' duration, died at his home in Petersburg, Va., April 30. He was thirty-four years of age and graduated from the Medical College of Virginia in 1915. Dr. McCuiston moved to Petresburg about four years ago and was a member of the Medi-

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cal Society of Virginia. He is survived by his wife and a large family connection.

**Dr. Samuel H. Moseley,**

Of Ebony, Va., died at his home at that place April 26, after a long illness. He was born in Brunswick County, Va., fifty-one years ago and, upon completing his academic education, studied medicine at the University College of Medicine, Richmond, from which he graduated in 1899. He joined the Medical Society of Virginia that same year and continued a member to the time of his death. He is survived by his widow and several children.

**Dr. Elias M. Wilkinson,**

Of Shaft, Va., died at his home in that place, April 10, death being due to acute indigestion. He was born in Nebraska, May 19, 1861, and studied medicine at the University of Maryland, from which he graduated in 1888, later taking post-graduate work in several colleges. He was a member of the Medical Society of Virginia. Dr. Wilkinson is survived by his wife and eight children.

**Resolutions on Death of Dr. Wilkinson.**

On Saturday, April 11th, the following members of The Russell County Medical Society, Drs. Gilmer, Trigg, Burns, Whited, Couch and Greear, called at the home of Dr. E. M. Wilkinson, Shaft, Va., he having died of acute indigestion on April 10th. Drs. Burns, Trigg and Gilmer were appointed to select and purchase an appropriate floral tribute to the departed friend and member of The Russell County Medical Society. Drs. Whited and Greear were appointed to draw up the resolutions of respect, after which the physicians named departed for their respective homes with heavy hearts and a consciousness of the fact that they also should be ready and unafraid when the Grim Reaper shall call for further sheaves from the ranks of the medical profession in Russell County.

Dr. E. M. Wilkinson was born in the state of Nebraska, May 19, 1861. He graduated from the University of Maryland in the year 1888. He was a Shriner and thirty-second degree Mason and a member of the Methodist Church. He married Miss Mary Ellen Porter, Barren Springs, Va., in the year of 1887. To this marriage there were born nine children, all living but one. Three of the children are married: Mrs. C. P. Dalton, Franklin, Va.; B. B. Wilkinson, Fielddale, Va., and Harry R. Wilkinson, Clinch County, Va. The other children were at home at the time of their father's death.

Dr. Wilkinson practiced at the following points in Virginia: Barren Springs, Sylvatus, Hillsville, Patterson, Laurel Fork, Fries, and for the past seven years he has been practicing for the Clinchfield Coal Corporation, where he has been doing an efficient and highly satisfactory practice. Dr. Wilkinson was a man who kept abreast with his profession and had taken post-graduate courses at the New York Polyclinic, in 1901; in electro-therapeutics, in 1903; at Northern Illinois School of Otology and Ophthalmology in 1912, and in gynecology and surgery at New York Polyclinic, 1902.

WHEREAS, God in His infinite wisdom has seen cause to remove our fellow physician and friend from the walks of men;

RESOLVED, That the Russell County Medical Society express hereby its appreciation of the professional, private and public life of Dr. E. M. Wilkinson, and, furthermore, it also expresses its profound sympathy for his bereaved family;

FURTHER BE IT RESOLVED, That this tribute of respect be spread on the minutes of The Russell County Medical Society, that the editors of the periodicals mentioned mail copies containing this notice to the family of Dr. Wilkinson, and that same shall be published in the Lebanon News, Lebanon, Va.; Honaker Herald, Honaker, Va., and the VIRGINIA MEDICAL MONTHLY, official publication of the Medical Society of Virginia, of which our fellow physician was a member.

(Signed)
E. P. WHITED, M. D.,
Honaker, Va.
C. B. GREEAR, M. D.,
Honaker, Va.

**Dr. Albert Cullen Fox,**

For forty years a practicing physician of Waynesboro, Va., died at his home in Lincolnton, N. C., April 5, and was buried at Waynesboro. He had moved to Lincolnton about eighteen moths ago on account of his wife's health. Dr. Fox was born in Jacksonville, Ala., about seventy-seven years ago and studied medicine at the University of the City of New York, graduating in 1873. He had been a member of the Medical Society of Virginia since 1883. Dr. and Mrs. Fox celebrated their fiftieth wedding anniversary last October. He is survived by his wife and several children.

**Dr. Charles Edgar Busey,**

Of Lynchburg, Va., died at his home in that place, April 5, after a brief illness. He was a native of Baltimore and seventy-two years of age. He graduated from the College of Physicians and Surgeons, Baltimore, in 1878, and later took a post-graduate course. He moved to Lynchburg in 1884, and was at one time a member of the Medical Society of Virginia. He is survived by his wife and three daughters.

**Dr. Melville Cox Strickland,**

Formerly of Salem, Va., died at his home in Oregon City., Ore., April 19, from cerebral hemorrhage. He was fifty-five years of age and graduated from Jefferson Medical College, Philadelphia, in 1889. He left Salem, Va., about twenty-seven years ago, and has since made his home in Oregon. He had been in bad health about a year. Two sisters and two brothers—Dr. J. T. Strickland, of Roanoke, Va., and Dr. E. F. Strickland, of Winston-Salem, N. C.—survive him.